The Milroy Lectures

ON

DISINFECTION AND DISINFECTANTS.

Delivered before the Royal College of Physicians of London on March 2nd, 4th, and 9th, 1909,

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LECTURE III.[1]

Delivered on March 9th.

MR. PRESIDENT, FELLOWS, AND GENTLEMEN,—I propose to-day first of all to discuss the nature of the process of disinfection and to conclude with some remarks on the state of the law respecting the sale of disinfectants. The efficiency of a disinfectant generally depends partly on its concentration, though it does not necessarily vary directly with this, as we shall see in the case of mercuric chloride; indeed, the rate of penetration into bacterial cells may *decrease* as the concentration *increases* above a certain limit. This also we shall see later in the case of the acidum carbolicum liquefactum, a 90 per cent. (or thereabouts) carbolic acid, which is less active than a 5 per cent. aqueous solution. And, as a matter of fact, most disinfectants yield a greater amount of disinfectant efficiency per gram-hour in dilute than in strong solution.

With regard to the process of disinfection, the interaction which takes place between organisms and disinfectant when the two are mixed together, much attention has of late been bestowed on this. It might be thought that given a certain strength of disinfectant the admixture would be followed by the rapid death of all the organisms present, and such is apparently the case with a strong disinfectant. If we use a weaker disinfectant, one which does not sterilise the mixture under an appreciable time—say, 15 or 30 minutes—it again might be thought that while a few of the organisms might be killed during the earlier periods of the interaction the majority would be killed approximately together towards the end of the period in which experiment showed sterilisation to be completed. This, however, is not the case; the disinfection proceeds in an orderly manner, the greater proportion of organisms is destroyed during the earlier periods of interaction, and towards the end of the period a scanty residue of organisms remains alive and sterilisation is complete when these have been destroyed. Abbott,[2] in 1891, was perhaps the first to show the course of disinfection—namely, that a large proportion of the organisms are killed in the earlier stages, a resisting minimum prolonging the time until complete sterilisation is effected. Abbott worked with cultures of the common pus coccus, the *Micrococcus pyogenes*, var. *aureus* (*Staphylococcus pyogenes aureus*), and corrosive sublimate (mercuric chloride, perchloride of mercury). The experiments showed that a large proportion of the organisms was killed in the earlier period of treatment, but a small minority retained their vitality for some time longer.

The counting was done by means of agar plates and the following figures (Table XVII.) are the number of colonies developing after the disinfectant had been allowed to act for the times stated:—

TABLE XVII.

Plates made.	May 12th.	June 4th.	June 23rd.	July 16th.
Control.	1624	207	1620	1180
Immediately.	1180	86	—	—
5 minutes	1080	132	369	89
10 ,,	660	22	312	51
15 ,,	—	19	43	4
20 ,,	—	7	27	6
30 ,,	—	3	—	—

[1] Lectures I. and II. were published in THE LANCET of March 13th p. 741) and 20th (p. 815), 1909, respectively.

[2] Johns Hopkins Hospital Bulletin, vol. ii., 1891, p. 50.

Abbott formed the opinion that the persistence of the vitality of certain individuals is due, at least in part, to a greater resistance, and he found that the colonies growing from these individuals differed somewhat from those of the less resistant. He also noted that frequently the organisms which survived after treatment with the disinfectant grew much more slowly than the untreated organisms, and says, "it seems probable that while a certain proportion of the individuals in a culture exposed to sublimate may be killed at the beginning, certain others succumb to its action only gradually, and if removed from its influence before actually killed still possess the power of reproduction, though apparently in a very much enfeebled way."

In 1897 Krönig and Paul made an important contribution to the theory of disinfection based on the garnet method, using various disinfectants and organisms. Some careful experiments were performed on the rate of disinfection, using anthrax spores and other organisms and mercuric chloride and other metallic salts of various concentrations, as well as phenol and other disinfectants. As a result of their work Krönig and Paul came to the conclusion that the germicidal action of salts of mercury is due to the metallic ion and that the germicidal actions of two salts of mercury will be proportional to their ionisation. By the theory of ionisation it is believed that when a salt is dissolved in water it becomes more or less dissociated into two parts which carry opposite electrical charges. Thus in the case of sodium chloride—NaCl—this on solution is dissociated into positively charged Na particles and negatively charged Cl particles. These electrically charged particles are termed "ions," the positively charged being known as "cations" and the negatively charged as "anions." The amount of dissociation varies with different substances and in the case of three salts of mercury, the chloride, bromide, and cyanide, the degree of ionisation of the chloride is greater than that of the bromide, and the bromide is more ionised than the cyanide; the cyanide, in fact, is practically un-ionised. If, then, the germicidal action of these three salts is due to the mercury ion ($Hg^{\cdot\cdot}$) it would be expected that the chloride would be more potent than the bromide, and the bromide than the cyanide, and experiment bore this out, as is seen by the following table (Table XVIII.):—

TABLE XVIII.—*Krönig and Paul's Table 13. Anthrax Spores.*

Solution.	Percentage.	Colonies developing after—	
		20 minutes.	85 minutes.
$HgCl_2$, 64 litres	0·42	7	0
$HgBr_2$, 64 litres	0·56	34	0
$HgCy_2$, 16 litres...	1·57	∞	33

Control: $HgCl_2$ in 16 litres gave 16 colonies after six minutes. In each case the molecular weight in grammes of the salt was dissolved in the volume of water stated.

From this table it is apparent that the germicidal action increases with the time of exposure and that it runs parallel with the degree of ionisation. The germicidal action, therefore, depends chiefly on the concentration of the mercury "ion" or "cation," although it is likely that the chlorine and bromine ions may have some, though a comparatively slight, effect. Similar results were obtained with silver salts, as is seen by the following table (XIX.):—

TABLE XIX.—*Krönig and Paul's Table 29 (part). Anthrax Spores.*

Solution.	Percentage.	Colonies developing after—	
		15 minutes.	60 minutes.
$AgNO_3$, 4 litres	4·25	28	0
$AgClO_3$,, ...	4·79	39	0
$AgClO_4$,, ...	5·19	438	4

Control: $HgCl_2$ (16 litres) after 3 minutes gave 32 colonies.

Now these three silver salts are ionised to approximately the same extent, and therefore the variation in germicidal effect

would here seem to be due to the negative or anions, and it would appear that the nitrate ion is more potent than the chlorate ion, and this greater than the perchlorate ion. The same holds good for the alkalies, as shown by the following (Table XX.). In this case the *Micrococcus pyogenes*, var. *aureus*, was used, as the solutions have not sufficient germicidal power to act on anthrax spores.

TABLE XX.—*Krönig and Paul's Table XLI. (part). Micrococcus Pyogenes, var. Aureus.*

Solution.	Percentage.	Colonies developing after—	
		5 minutes.	10 minutes.
KOH 4 litres	1·40	345	0
NaOH 4 litres	1·0	386	0
LiOH 4 litres	0·6	685	0
NH_4OH 1 litre	3·5	∞	∞

By the addition of various substances the degree of ionisation may be altered. Thus, sodium chloride diminishes the ionisation of mercuric chloride, and hence a solution of mercuric chloride containing sodium chloride is less germicidal than one containing the same amount of mercuric chloride alone, as was previously pointed out.

An important point in connexion with this question of ionisation as affecting germicidal power is that the degree of ionisation does not vary directly with the degree of concentration of the salt. Thus, with mercuric chloride, doubling the concentration of the salt by no means doubles the degree of ionisation, and therefore on this theory it would not be expected that doubling the concentration would double the germicidal power, and this is found experimentally to be the case. As a matter of fact, increasing the concentration of a mercuric chloride solution from 1 to 2 per 1000 only increases the concentration of the mercury ions from 61 to 69, or by about 13 per cent.

Madsen and Nyman[3] pointed out that the results obtained by Krönig and Paul in their experiments corresponded to the course of a monomolecular chemical reaction. They performed experiments of their own with mercuric chloride which confirmed this view, observed the influence of a heightened temperature in accelerating the reaction, and also found that the disinfection of anthrax spores by heat at 100° C. and at 110° C. followed the same course. This work was followed up by Miss Chick in an important paper containing the results of a laborious investigation, entitled "An Investigation of the Laws of Disinfection."[4] Miss Chick shows, in the first place, that the disinfection of anthrax spores with phenol is a gradual process, and on plotting the results, ordinates representing the numbers of surviving bacteria and abscissæ the corresponding times, the points are found to lie upon a fairly smooth curve, the form of which suggested the existence of a logarithmic relation between the two variables—*time* and *number* of surviving bacteria. Miss Chick says:[5] "In fact, the curves appeared to be very similar in form to that expressing the course of a unimolecular reaction and the equation for this $\frac{1}{t_2 - t_1} \log \frac{C_1}{C_2} = K$ was found to be applicable to the case of disinfection, if, in place of the terms C_1 and C_2 expressing concentration of reacting substances, the numbers of surviving bacteria were inserted thus: $\frac{1}{t_2 - t_1} \log \frac{n_1}{n_2} = K$ where n_1 and n_2 are the numbers of bacteria surviving after times t_1 and t_2 respectively."

I may here digress for a moment to explain the meaning of the term "unimolecular reaction." If cane sugar is boiled with dilute acid it takes up water and is split up in accordance with the equation—

$$\underset{\text{(Cane sugar)}}{C_{12}H_{22}O_{11}} + H_2O = \underset{\text{(Dextrose)}}{C_6H_{12}O_6} + \underset{\text{(Levulose).}}{C_6H_{12}O_6}$$

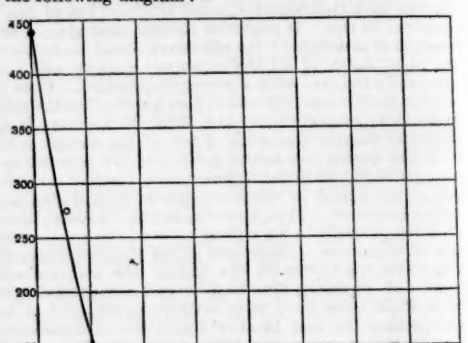
Actually there are in this reaction two reacting substances, the sugar and the water, and the reaction might be said to be di-molecular; but since the latter reagent, the water, is always present in such large excess that its concentration may be regarded as remaining constant during the course of the reaction the velocity of the reaction at any moment is determined only by the active mass of the first reagent, the sugar, and hence the reaction is always classed as a unimolecular one, and chemists have deduced the first formula given above as expressing the course of the reaction.

To return to the case of disinfection of anthrax spores with phenol. Miss Chick gives the following table (Table XXI.) of an experiment from which you will see that the course of the disinfection is gradual and that applying the second formula a fairly invariable constant is obtained:—

TABLE XXI.—*Anthrax Spores (5 per cent. phenol at 33·3° C.).*

Sample.	Time in hours.	Mean number of bacteria present in 1 drop of mixture.	Value of K calculated from the formula $\frac{1}{t_2 - t_1} \log \frac{n_1}{n_2} = K$.
1	0	439·0	Initial value of n (= n_1
2	0·5	275·5	0·40
3	1·25	137·5	0·40
4	2·0	46·0	0·49
5	3·0	15·8	0·48
6	4·1	5·45	0·46
7	5·0	3·6	0·41
8	7·0	0·5	0·42
			Mean value of K 0·44.

On plotting these results the ordinates representing numbers of anthrax spores and the abscissæ the times of sampling a smooth and regular curve is obtained, as shown by the following diagram:—



Curve to represent the course of disinfection of anthrax spores with 5 per cent. phenol at 33·3° C. The vertical column indicates the number of spores; the base line gives the time in hours. (After Miss Chick.

Judging by what Miss Chick says it would appear that she regards the process as being a unimolecular reaction,[6] comparable to the inversion of cane sugar, the one reagent being the bacterium, the other the disinfectant which is in large excess.

[3] Zeitschrift für Hygiene, vol. lvii., p. 388.
Journal of Hygiene, vol. viii., No. 1, 1908, p. 92.
[5] Loc. cit

[6] Miss Chick says: "Let us assume that during disinfection the germicide operates upon the bacterium by so altering the constitution of its protoplasm as to render it unfit for the continued vitality of the organism. ..... It would not therefore be surprising that disinfection should conform to a law known to govern many chemical processes, and we may employ one of the well-known interpretations as to why these reactions should be gradual and not sudden, viz., that at a particular time only a proportion of the molecules (of the bacteria in the case of disinfection) are temporarily in such a state as to permit of the combination." She adds in a note: "This theory has received substantial support in the case of some radio-active substances, whose decay proceeds in accordance with the unimolecular law."

In the case of cultures of a non-sporing organism, *Bacillus paratyphosus*, Miss Chick found that applying the same method the constant obtained appeared continually to decrease in value and she therefore concluded there is here some other factor, and this she believes to be differences of resistance due to the variations in age of the bacteria present in an ordinary 24 hours' culture of *Bacillus paratyphosus*, and working with young organisms obtained by subculturing at short intervals she considers that a much closer approximation is obtained to the unimolecular reaction. Miss Chick concluded that the old bacteria are less resistant than the young bacteria.

I may offer some criticism on Miss Chick's work. In the first place, while admitting that the disinfection of anthrax spores follows the *course* of a unimolecular reaction, I think it extremely doubtful, to say the least, if the reaction between disinfectant and bacterium *is* a unimolecular reaction. Such an hypothesis must involve the assumption that the bacterial molecules reacting are all of the same kind, a very big assumption, as it appears to me. In fact, Watson,[7] from a consideration of the data contained in Miss Chick's paper, suggests that the reaction is of the seventh order at least. I also found that the killing of mustard seeds by mercuric chloride follows much the same course as the killing of bacteria, though the results are not so regular.[8] (See Table XXII.) The variations, however, are explicable when one considers the relatively large size of the mustard seed and the variations which occur in size of different seeds and in thickness of their membranes. It appears to me that only by a wide stretch of the imagination can the interaction of mustard seed and disinfectant be considered as a unimolecular reaction, or a reaction of a higher order, yet it follows approximately the course of the former.

TABLE XXII.—*Effect of Mercuric Chloride (at 20° C.) on Germination of Mustard Seeds.*

Time in minutes.	No. grew.	No. not grew.	Total.	No. which grew calculated on 500 seeds.	Constant K.
30	497	32	529	470·0	0·0018
45	387	45	432	447·9	0·0016
60	385	102	487	395·3	0·0023
75	218	230	448	243·3	0·0052
90	101	357	458	110·3	0·0087
105	86	439	525	81·9	0·0087
120	72	421	493	73·0	0·0080
135	20	492	512	19·5	0·0117

In Table XXII. it will be seen that the value of K obtained for 30, 45, and 60 minutes is fairly constant, then at 75 minutes there is a rise in the value of K, which again becomes approximately constant for 90, 105, 120, and 135 minutes. This alteration in the value of K after the mercuric chloride has acted for an hour or so may fairly be attributed, I think, to the fact that the seeds being relatively large, it takes time for the disinfectant to penetrate, penetration being incomplete until the lapse of an hour or thereabouts. Other experiments which I have done substantiate this explanation.

Again, taking an actuarial life table, preferably a female life table, as females are less liable to accidents than males, and calculating in a similar manner a constant K, I find that at the middle, and as I should regard it, the more stable period of life, the value of K is approximately constant; in fact, the constancy of K is more nearly attained than in the disinfection of anthrax spores with phenol. Table XXIII. demonstrates this.

Up to 25 or so life is uncertain owing to the enormous infant mortality in the first two or three years, to the high incidence of zymotic diseases up to 15 years, and, finally, to the high incidence of tuberculosis from 15 to 25 or 30.

[7] Journal of Hygiene, vol. viii., No. 4, 1908, p. 540.

[8] The method of experiment was to soak measured quantities of the seeds in a series of beakers with a large excess of 1 in 500 mercuric chloride. At the time intervals one of the beakers was taken, the mercuric chloride poured off, the seeds were well rinsed, first with distilled water and then with H_2S solution, after which they were soaked in H_2S solution for two hours, again washed in water, and finally sown on wet blotting paper in Petri dishes. It was found by controls that H_2S solution had no effect on the germination of the seeds.

TABLE XXIII.—*Of 100,000 Females Born, Numbers Surviving at Ages 5–70 (Tatham's English Life Table No. 6) Calculation of Constant therefrom by the Formula for a Unimolecular Reaction.*

Age.	Numbers surviving.	Constant K.	Calculation of numbers surviving, taking mean of constants for ages 25–60, when K = 0·00497.	Calculation of numbers surviving, taking mean of constants for ages 30–55, when K = 0·00479.
0	100,000	—	—	—
5	78,214	0·02134	—	—
10	76,527	0·01162	—	—
15	75,550	0·00812	—	—
20	74,177	0·00649	—	—
25	72,539	0·00558	75,119	—
30	70,582	0·00504	70,942	71,829
35	68,215	0·00475	66,997	67,975
40	65,301	0·00462	63,271	64,328
45	61,918	0·00463	59,752	60,877
50	58,032	0·00473	56,429	57,611
55	53,310	0·00496	53,293	54,520
60	47,304	0·00542	50,327	—
65	39,830	0·00615	—	—
70	30,917	0·00728	—	—

Incidentally, it may be observed that the fall in the value of K for the whole life-table from 0 to 50 years or so is not unlike that which occurs with the disinfection of a 24 hours' culture of *Bacillus paratyphosus* as set out in Miss Chick's tables. I venture to suggest, therefore, that the obtaining of a constant in the case of disinfection does not necessarily mean that the reaction *is* a unimolecular one, or, indeed, one of any higher order. Can another suggestion be made to account for the course of the reaction in disinfection?

Stripped of its mathematical form, all that the formula means is that the number of bacteria killed at any time is proportional to the number living. Thus if we start with 100 bacteria living and find that in five minutes the number living is reduced to 50, at ten minutes the number will be reduced to 25, and so on, and if the time intervals are equal the series will be a geometrical one. If it be admitted that in any collection of individuals, whether of bacteria or of men, or of any other living cells, plants, or animals, the different individuals possess different resistances—which undoubtedly is the case—then it seems to me that this relation between the numbers living and the numbers killed must hold good and that the course of the killing will be represented by the formula for a unimolecular reaction, though it has nothing to do with such a reaction. There is no doubt that in a collection of human beings there are all grades of resistance—a large number will collect on either side about a mean resistance, a few will show extremes of less or greater resistance. By the action of adverse circumstances—in the case of bacteria by the action of a disinfectant—the less resistant and a large proportion of the middle resistant will be slaughtered early; hence the large proportion killed in the early stage of the act, and as time goes on a less and less proportion will succumb, as the resistance of the survivors increases.

I next come to the case of disinfection with *Bacillus paratyphosus*. Miss Chick found that with a 24 hours' culture the value of K is not nearly so constant as with anthrax spores, in fact the value of K is continually falling. She concludes that some other factor is at work here, and this factor she believes to reside in the varying age of the individuals in such a culture. Working with cultures in which the proportion of old individuals is reduced by subculturing at short intervals, Miss Chick claims that a much closer approximation to constancy of K is obtained, and concludes that the young individuals are more resistant than the old ones. What exactly is meant by old and young individuals is not defined. A young bacterium might be either one that has recently been formed by division or one which had thus been produced not more than a few (5–8) generations back but had not divided since; an old bacterium might be one on the point of dividing, or one that for some reason has not divided for a considerable time.

Further, I am not sure of the validity of Miss Chick's premisses. It may be granted that there is probably a greater diversity in age of the bacterial individuals of a 24 hours' culture than of a 3 hours' culture, but is it a fact that there is a greater proportion of actually young individuals in a 3 hours' culture than in a 24 hours' culture. I confess I am uncertain as regards this. For it must be remembered that a bacterium such as *Bacillus paratyphosus* divides every 20–30 minutes, and even in a 3 hours' culture there may be diversities of age corresponding to from 1 to 9 generations, and I can conceive that in a 24 hours' culture there may be just as great a proportion of really young organisms as in a 3 hours' culture. But granting the validity of Miss Chick's premisses, there is a way, I think, in which Miss Chick's tables bearing on this point can be analysed—namely, by taking the percentage difference between the constants obtained at different times in the two cases—the old cultures and the young cultures. I shall only consider the tables in which phenol is the disinfectant, because in the tables for *young* cultures the results for this disinfectant are alone given.[9] It is to be noted that an absolute comparison by this method of percentage difference is not possible, owing to the fact that the times of sampling vary in the different tables, but at any rate I think that an approximation is found in this way. Proceeding by this method of percentage difference in the constants at various times, I take the first value of K obtained, then the value of K at the time nearest to seven minutes, and finally the value of K at the time nearest to 20 minutes. The results are as follows (Table XXIV.):—

TABLE XXIV.—*Analysis of Miss Chick's Tables.*

OLD (I.E., 24 HOUR CULTURES).

Table III.

20° C.

K at 4 minutes is 0·27 } Difference = 15%
,, ,, 7 ,, ,, 0·22 }
,, ,, 20 ,, ,, 0·08 ... ... } Difference = 70%

Table IV.

20° C.

K at 2 minutes is 0·63 } Difference = 60%
,, ,, 7 ,, ,, 0·25 }

Table V.

(*a*) At 20° C.

K at 2 minutes is 0·29 } Difference = 27%
,, ,, 8 ,, ,, 0·21 }
,, ,, 12 ,, ,, 0·22 ... ... } Difference = 24%

(*b*) At 30° C.

K at 2 minutes is 0·93 } Difference = 36%
,, ,, 6 ,, ,, 0·59 }

Table VII.

(*b*) At 21° C.

K at 3 minutes is 0·36 } Difference = 22%
,, ,, 7 ,, ,, 0·28 }
,, ,, 20·5 ,, ,, 0·18 ... ... } Difference = 50%

YOUNG CULTURES.

Table XI.

Three hour culture 20° C.

K at 0·5 minutes is 0·62 } Difference = 50%
,, ,, 6 ,, ,, 0·30 }
,, ,, 10 ,, ,, 0·20 ... ... } Difference = 66%

Table XIII.

Second generation young cultures 20° C.

K at 2 minutes is 0·43 } Difference = 32%
,, ,, 7 ,, ,, 0·29 }

Table XV.

Fourth generation young cultures.

(*a*) At 20° C.

K at 3 minutes is 0·081 } Difference = 15%
,, ,, 7·5 ,, ,, 0·093 }
,, ,, 10·2 ,, ,, 0·072 ... ... } Difference = 11%
,, ,, 12·3 ,, ,, 0·065 ... ... } Difference = 29%

(*b*) At 30° C.

K at 2 minutes is 0·31 } Difference = 22%
,, ,, 5·4 ,, ,, 0·38 }

Table XII.

Third generation young cultures. 20° C.

K at 2 minutes is 0·066 } Difference = 22%
,, ,, 7 ,, ,, 0·051 }
,, ,, 20·3 ,, ,, 0·054 ... ... } Difference = 18%

[9] The tables thus analysed are Tables III.–XV., pp. 102–114, Journal of Hygiene, vol. viii., No. 1, 1908.

So far there appears to me little to be said in favour of Miss Chick's hypothesis. I give two more of Miss Chick's tables which, however, are not comparable together, as the temperature was in one case 11° C. and in the other 20° C.

Table VII.

(*a*) Old culture 11° C.

K at 3 minutes is 0·094 } Difference = 8·5%
,, ,, 10 ,, ,, 0·102 }
,, ,, 20 ,, ,, 0·062 } Difference = 34%.

Table XIV.

Third generation young cultures 20° C.

K at 1·9 minutes is 0·13 } Difference = 15%
,, ,, 7·1 ,, ,, 0·11 }
,, ,, 28 ,, ,, 0·08 } Difference = 38%

Looking at these tables analysed in this way I confess that I can see only a slight balance in favour of the young cultures as giving a constant less variable than the constant obtained with old cultures. For instance, in Table XV., which on Miss Chick's hypothesis should give the best result, the culture being of the fourth generation, the percentage difference between K at 3 minutes and at 7·5 minutes is 15 per cent., at 3 minutes and 12 minutes is 29 per cent., and at 3 minutes and 20 minutes is 27 per cent. On the other hand, with old (24 hour) cultures, in Table VII. (11° C.) the percentage difference between K at 3 minutes and at 10 minutes is 8·5 per cent., and at 3 minutes and at 20 minutes is 34 per cent., which, on the whole, is quite as good a result as that of Table XV., which, on Miss Chick's hypothesis, should be much the better. As a matter of fact, the constant for 20 minutes is wrongly calculated in Table VII.; instead of 0·062 it should be 0·115. Substituting this value of K, the percentage difference between K at 3 minutes and at 20 minutes is 22 per cent., and this table becomes the best of the whole series. There are other errors in the calculation of the constants; for instance, in Table XIV., K at 1·9 minutes is much nearer 0·14 than 0·13, and the substitution of this value makes the percentage differences 23 per cent. and 46 per cent. instead of 15 per cent. and 38 per cent. as given by Miss Chick's figures.

There are other factors which complicate a comparison between the action of the disinfectant on the old and on the young cultures of *Bacillus paratyphosus*. For an absolute comparison the times of sampling should have been the same and the numbers of bacteria should have been approximately the same; these conditions were not observed. It is noteworthy that the tables in which the value of K decreases most are those in which the initial sampling was done early and in which relatively large numbers of bacteria were dealt with.

On the whole, therefore, while Miss Chick's hypothesis may be true—viz., that young *Bacilli paratyphosi* are more resistant than old individuals of the same species and that if a culture be obtained consisting chiefly of young individuals the value of K becomes more constant—I do not consider that the experimental work she has adduced proves the correctness of this hypothesis.

I have suggested that the gradual and proportional destruction of bacteria in disinfection is explicable on the hypothesis that the individual bacteria possess different resistances. Miss Chick suggests that at a particular time only a proportion of the bacterial molecules are temporarily in such a state as to permit of the combination with disinfectant; in other words, the bacterial molecules are undergoing cycles or phases, in some of which alone are they capable of undergoing combination with the disinfectant. Miss Chick's hypothesis might seem to receive confirmation from the fact that the hydrolysis of cane sugar progresses in a similar manner; some of the cane-sugar molecules—those which react at a particular time—being in a state different from the others which are not reacting at that time. This is true, but the difference between the reacting and non-reacting molecules is reasonably explicable by differences in temperature—that is, by differences in their energy. For temperature is a measure of energy or motion of molecules, and the temperature of a solution represents the *mean* energies or motions of the whole of the molecules in the solution. Probably a majority of the molecules have motions near the mean represented by the temperature, but some will have energy above and some energy below this mean. For hydrolysis to occur the molecule of cane sugar must possess a certain energy. Hydrolysis of cane sugar does take place, though extremely slowly, at 0° C.; that is, it is

only the molecules which have energies much above the mean that react, and at 0° C. these will be very scanty and the reaction proceeds very slowly. The molecules change their energy from time to time, and as a molecule acquires the requisite energy it undergoes hydrolysis, hence in time the whole of the cane-sugar molecules may be hydrolysed even at 0° C. If, however, the temperature be raised the number of cane-sugar molecules at any one time having the requisite energy for hydrolysis to take place becomes increased and hydrolysis proceeds more rapidly, and at boiling temperature may be completed in a few seconds. There is, therefore, no need to assume "phases" even in the case of cane-sugar molecules undergoing hydrolysis, the "phases" being simply difference of energy or motion.

All acids have some disinfectant power, greater in the case of the mineral acids, and their relative germicidal values seem to vary according to a law fairly well established by von Linglesheim and Boer—namely, that efficiency varies with the degree of acidity and not with the concentration, and solutions of acids not of equal percentage composition but of equal acidity have approximately the same disinfectant efficiency, whatever the acid and whether it be inorganic or organic. Organic acids are usually weak acids and have large molecular weights, hence their comparative inefficiency as germicides. In the case of acids the hydrogen ions appear to be the active agents. "Commercial" or "crude carbolic acid" contains little phenol and mainly consists of cresols and higher phenols, which, however, are extremely insoluble. While the disinfectant power of the higher phenols seems to increase in proportion to their position in the series, their insolubility also increases so that in watery solution they cannot be used as disinfectants. Hence these substances and others with a di-phenyl nucleus can only be employed as emulsions—emulsions made with vegetable or with tar oils, glue, &c. It is to this class of substances that a number of recently introduced disinfectants belong, many of which are very efficient, possessing a germicidal power 12, 15, or 20 times that of carbolic acid, and having the advantage of being relatively non-toxic. There is some evidence to show that the germicidal power of emulsified disinfectants is greater than can be accounted for by the activity of the active constituent and theoretically seems likely, but we want some reliable experimental work in confirmation. It is true that Chick and Martin[10] have compared the germicidal value of higher tar acids emulsified in water and dissolved in alcohol, their results showing that the emulsified form was much the more active; but the reliability of this work is vitiated by the fact that they have entirely failed to take into account the influence of alcohol in decreasing germicidal activity; for example, in the case of phenol, which I dealt with in my last lecture. The difference in germicidal power of tar acids emulsified in water and dissolved in alcohol may therefore be entirely due to the action of the solvent—the alcohol—depressing the germicidal power of the tar acids when dissolved in alcohol.

On the other hand, particles in a fluid have the power of taking up, or "adsorbing" as it is termed, the constituents of the fluid, so that the distribution of these may become different in the particles and in the solution. Chick and Martin state that if bacteria be mixed with an emulsified disinfectant the bacteria are seen to be continually bombarded by the droplets of the latter. Moreover, by adsorption the particles, in this case bacteria, may remove a large proportion of the emulsified substance, and finally, may in certain circumstances, depending on the original concentration of the substance and the number of particles, contain as much as from two to three times the amount of substance left in solution. By this adsorption, therefore, the bacteria may rapidly become surrounded by the disinfectant in much greater concentration than exists in the liquid. This power of adsorption is, however, not confined to bacteria; the organic matter in a mixture will similarly adsorb and deteriorate the disinfectant. This deterioration, however, may be more apparent than real, for, as Schryver[11] has pointed out, it may mean a greater concentration in the particulate matter, which is just what is required, because this is the very matter that is most difficult to disinfect, the relatively "naked" bacteria in the fluid being much more readily killed. Adsorption, however, is a delicate matter to adjust and it is found to be a maximum with some particular concentration.[12]

I now come to the last portion of my subject—viz., the regulation of the sale of disinfectants. In the first place, it may be noted that there has been during the last few years a great increase in the use of disinfectants by the public—whether wholly wise and needful must be a matter of opinion. But when we see a public authority watering its streets with water just coloured with potassium permanganate—an utterly futile procedure as regards any disinfectant action—one is lost in wonder at the lack of knowledge of the subject possessed by the individual or committee directing such an operation and at the waste of the ratepayers' money involved thereby. The money wasted in attempts to disinfect highways and main sewers would be of some use were it employed to pay for more water for flushing purposes and for keeping the surface of roads in a moist condition to prevent the dissemination of dust, which is undoubtedly deleterious. Until recently—i.e., before the advent of the carbolic coefficient—either no standard of disinfectant value was set or the definition of the disinfectant's potency was settled by caprice or credulity or a chemical standard was adopted. For instance, an ordinary specification adopted by many authorities for "carbolic acid" ran as follows: "To contain not less than 95 per cent. of carbolic and allied acid obtained from tar." Nowadays, however, there is scarcely any phenol in commercial "carbolic acid" and the specification practically asks for 95 per cent. of cresylic acid, a saturated solution of which contains about ½ per cent., a solution of weaker disinfectant efficiency than 5 per cent. phenol, which is itself an inefficient germicide for spores. The public mind seems to be obsessed with the value of carbolic acid, and this has led in the past to numbers of cases of poisoning, when poisonous disinfectant fluids were sold without let or hindrance. Under the Privy Council Order of June, 1900, however, it is now not legal to sell a fluid containing more than 3 per cent. of carbolic acid except as a poison. This has had the effect of flooding the market with carbolic disinfectants of less than this strength and therefore very inefficient as regards germicidal power. It may be remembered in my second lecture that I quoted Buchanan Baxter, who said that at least 2 per cent. carbolic acid must be present for adequate disinfection—a difficult matter to attain when the disinfectant contains only 3 per cent. Thus, Rideal[13] states that he was informed by a manufacturer that he (the manufacturer) had sold as a disinfectant amounts of a fluid of this nature in 1905, 28,000 gallons; in 1906, 37,000 gallons; and in 1907, 66,000 gallons. This gives some idea of the enormous trade which must be done at the present time in disinfectants and suggests that it is high time that the public be protected. It seems, in fact, that, save the regulation as to poisonous character, the public is unprotected as regards the germicidal power of the disinfectants they may purchase even if the germicidal power of the disinfectant be stated as a carbolic coefficient or in any other form. There seems to be no authority under the Food and Drugs Acts, for instance, to insist that the substance comes up to the stated standard. The only procedure applicable would appear to be for the purchaser to have the test done and then to proceed against the manufacturer if the substance did not come up to the standard stated—all this at the expense of the purchaser be it noted—a most unsatisfactory state of affairs. A number of public authorities, the Admiralty and the War Office, have adopted the carbolic coefficient as obtained by the Rideal-Walker or drop method as a means of protecting themselves against worthless preparations—a step in the right direction though doubtless not final. On the other hand, the Local Government Board and the Board of Agriculture, which are primarily concerned with the public health, have not yet officially recognised any means of standardisation. I grant that we are not yet in a position finally to adopt any particular standard or method of standardisation, but enough work has surely now been done to entitle us to some official guidance in the matter. There are, I am glad to say, indications in some official directions that this matter is not altogether lost sight of and suggesting promise for the future.

[10] Journal of Hygiene, vol. viii., 1908, p. 668.
[11] Journal of Tropical Medicine and Hygiene, May 1st, 1908.
[12] See Chick and Martin: Loc. cit.
[13] Journal of Tropical Medicine and Hygiene, May 1st, 1908.

I may now briefly allude to special official regulations for use in particular cases. In the Factory and Workshop Act, 1901, it is prescribed that in dealing with certain wools, hair, &c., liable to be infected with anthrax "all pieces of skin, scab, and clippings or shearings shall be removed daily from the sorting room and shall be *disinfected* or destroyed"; that overalls shall not be taken out of the works unless "steeped over night in boiling water or a *disinfectant*," and that the floors of the work-rooms "shall be thoroughly sprinkled daily with a *disinfectant solution*," but there is no suggestion of the nature or strength of the disinfectant to be employed. In the Statutory Rules and Orders, 1907, No. 984, dealing with "Factory and Workshop: Dangerous and Unhealthy Industries," it is prescribed that horsehair coming from China, Siberia, or Russia, and liable to anthrax infection, shall not be subjected to any manipulation other than opening or sorting until it has undergone *disinfection*, and "disinfection" is defined as exposure to steam at a temperature of not less than 212° F. for at least half an hour, or "exposure to such *disinfectant* under such conditions of concentration and temperature of the disinfectant, and duration and manner of exposure of the material to it and otherwise, as are *certified* to secure the destruction of anthrax spores in all parts of all horsehair subjected to the process." By "certified" is meant "certified by the director of a bacteriological laboratory recognised by a corporation in the United Kingdom having power to grant diplomas under the Medical Acts, 1858 to 1905." This seems to me to be a very excellent regulation. No particular disinfectant is specified and hence no injustice is done to any manufacturer; all that is stipulated is that the disinfectant must be tested by a recognised authority and on him the onus is thrown of proving its efficiency and of prescribing the manner of using it.

In an Order of the Board of Agriculture and Fisheries dated April 5th, 1906, and cited as the "Diseases of Animals (Disinfection) Order of 1906," dealing with glanders and foot and mouth disease, it is specified that: "The place or thing or the part thereof required to be disinfected shall be thoroughly coated or washed with (*a*) a 1 per cent. (minimum) solution of chloride of lime containing not less than 30 per cent. of available chlorine; or (*b*) a 5 per cent. (minimum) solution of carbolic acid (containing not less than 95 per cent. of actual carbolic acid), followed by a thorough sprinkling with limewash; or (*c*) a disinfectant equal in disinfective efficiency to the above-mentioned solution of carbolic acid followed by thorough sprinkling with limewash." In the Swine Fever Order, 1908, of the same department regulations as to disinfection similar to the foregoing are specified. In the Board of Trade Instructions to Superintendents of Mercantile Marine Offices dated February, 1907, disinfectants are scheduled as (1) carbolic acid powder or other disinfectant powder of approved quality; and (2) commercial carbolic acid or other disinfectant of approved quality. Rather vague instructions. In the Rules of the Central Midwives Board, 1908, "An efficient antiseptic for disinfecting the hands" and for "douching in special cases" is all the information that is given to the midwife, and suggestions of a similar vague nature are given for disinfection in (1) a leaflet (No. 28) on Anthrax, Board of Agriculture and Fisheries; and (2) a memorandum on Cleansing and Disinfection of Schools, issued by the Scotch Education Department, 1907. It will thus be seen that directions as to disinfection are vague and unsatisfactory except in the case of anthrax-infected horsehair. When we turn to foreign countries much the same *laissez faire* as regards the sale of disinfectants exists as in this country. Dr. Calmette informs me that no restrictions are imposed in France, Professor Galli-Valerio that none are imposed in Switzerland, Dr. Prausnitz that none exist in Germany, and Dr. Rosenau and Dr. Wiley inform me that there are no restrictions in the United States unless the substance is to be administered to, or used upon, human beings. In all these cases the sole restriction there may be arises when the substance is a poison. With regard to the United States, Dr. Rosenau, director of the Hygienic Laboratory, Public Health and Marine Service, informs me that: "The law of June 30th, 1906, defines a drug as follows: Section 6. The term 'drug' as used in this Act shall include all medicines and preparations recognised in the United States Pharmacopœia and National Formulary for *internal* or *external use*, and any substance or mixture or substances intended to be used for the cure, mitigation, or prevention of disease of either man or other animals. In accordance with this definition disinfectants used in general sanitary work do not come under this law, nor is there any other Act to regulate their sale and manufacture. A substance labelled or advertised as a disinfectant for internal or external use of man or animals would come under the purview of the Pure Food and Drugs Act and would have to comply in all respects with its provisions."

In some of the colonies, besides restrictions arising from poisonous properties, the disinfectant must have the carbolic coefficient stated on the label—e.g., New South Wales and Queensland—or if the substance has a strength at least equal to that of pure carbolic a duty of 3 per cent. is imposed, if less than this the duty is 15 per cent. (Cape Colony, Natal, Transvaal, Orange River Colony, and Rhodesia). I think there can be little doubt that insistence on the disclosure of the carbolic coefficient of the disinfectant on the bottle or vessel containing it would do much, particularly if the test had to be done in the presence of organic matter and if in addition it were made an offence if the disinfectant were found not to come up to the guaranteed strength, samples being taken by the local authority just as in the case of foods and drugs. Even then it should be understood that the disinfectant should be used only in large excess—that is, with a wide "margin or factor of safety" as insisted by Defries. In iron and steel work the engineer allows a considerable factor of safety—50, 100, or more per cent.—and the same should obtain in the case of disinfectants. At present we have no knowledge of what this "factor of safety" should be in the case of disinfection, but Sommerville and Walker make a reasonable suggestion. They say: "Since it has been long the custom to use for disinfection purposes in hospitals and elsewhere a 5 per cent. solution of carbolic acid, and since in the laboratory in the great majority of cases the Rideal-Walker standard carbolic acid used is a solution of 1 per cent. or thereabouts, it might be insisted that the multiple 5 be applied as a minimum to the strength of the various disinfectants which are found to perform the same germicidal work as 1 in 100 phenol. Thus where the dilution of a given disinfectant, equal in germicidal efficiency to 1 in 100 carbolic acid, is found to be, say, 1 in 1000, the manufacturer might be prohibited from recommending for any kind of work a higher dilution of his disinfectant than 1 in 200. In this connexion it may be mentioned that the lowered coefficients obtained with organic matter would automatically come into correspondence with the same minimum." It should also be noted that several proprietary disinfectant substances are being used for internal administration; surely these should come under the purview of the Sale of Food and Drugs Act? I think that these few details respecting the absence of any legislative control of the sale of disinfectants indicate the urgent need for some change in, or addition to, the law as it now stands.

[14] Sanitary Record, March 26th, 1908.

THE LEICESTER INFIRMARY.—The 136th annual report of the Leicester Infirmary, being that for the year 1908, has just been issued. It shows that two wards in the new south wing of the institution have been completed and are now occupied by patients. This new addition increases the accommodation of the infirmary to 237 beds. When the third ward is available the number of beds will be further increased to 270. In order to deal more adequately with the larger number of patients a second house surgeon has been appointed. The number of in-patients under treatment during the year was 3146, the largest recorded. The average cost per occupied bed was £81 14*s.* 10*d.* and the average cost per patient £5 7*s.* 8*d.* The out-patients' department dealt with 11,733 new patients and 29,048 patients received continued treatment during the year, the total attendances being 40,781. In the accident department 10,679 new cases received treatment during the year and the total number of attendances made was 47,591. The hospital board makes a special appeal for £10,000 to complete the cost of recent extensions and £2700 to defray the existing overdraft. For the general purposes of the hospital £3000 are required, which it is hoped will be met by new annual subscriptions.

Three Hunterian Lectures

ON

THE MECHANISM UNDERLYING THE VARIOUS METHODS OF ARTIFICIAL RESPIRATION

PRACTISED SINCE THE FOUNDATION OF THE ROYAL HUMANE SOCIETY IN 1774.

Delivered in the Theatre of the Royal College of Surgeons of England on March 1st, 3rd, and 5th, 1909,

BY ARTHUR KEITH, M.D. ABERD., F.R.C.S. ENG.,

HUNTERIAN PROFESSOR AND CONSERVATOR OF MUSEUM, ROYAL COLLEGE OF SURGEONS OF ENGLAND.

LECTURE III.[1]—THE PERIOD OF MECHANICAL MOVEMENTS OF THE CHEST WALL.—(*Continued*).

Delivered on March 5th.

DOE'S METHOD.

MR. PRESIDENT AND GENTLEMEN,—Having set out to examine the principle underlying the various methods of resuscitation it is necessary for me to notice the method introduced by Dr. O. W. Doe[2] in 1889, because the application of the principle involved is new. Doe's method is designed for the resuscitation of stillborn children. An air-tight box is employed into which the child is placed and with only its mouth exposed. By exhausting the box inspiration is produced; and expiration by forcing warm air into it. The author records the successful treatment of 50 cases.

TONGUE TRACTION.

Although the method of resuscitation introduced by Laborde[3] of Paris in 1892 cannot be regarded as a process of artificial respiration, yet for those who wish to arrive at a just opinion of the relative value of artificial respiration as a means of resuscitation Laborde's methods and results are of the greatest interest. Rhythmical traction of the tongue has been employed by anæsthetists as an incentive to produce inspiration in cases of deep narcosis for some considerable time, but Laborde was the first to practise it on the apparently drowned. He applied the method to a case where artificial respiration had been unsuccessfully employed for an hour. On opening the mouth with a spoon and pulling out the tongue with some degree of force a violent inspiratory movement was set up followed by vomiting. After applying rhythmical traction of the tongue for some time, the patient regained consciousness. Laborde found in his experiments with anæsthetised dogs that tongue traction was the quickest and most certain means of bringing the animals round; he found that section of the ninth pair of cranial nerves delayed the appearance of animation and concluded that the effect was a reflex manifested through the respiratory centre. Soon after the publication of his method a considerable number of cases were recorded from various parts of France in which the method had been successfully applied. Some of the cases reported in the recent records of the Royal Humane Society were treated by Laborde's method. Here, then, is a reputably successful method of resuscitation which its author supports with experimental data and practical application and yet cannot be called a method of artificial respiration. Examples like this make one look critically at all methods whatsoever.

In 1896 Sir A. E. Wright[4] made a suggestion, founded on his experience in the resuscitation of dogs, which, so far as I can learn, had never been applied to cases of suspended animation in man. Before commencing artificial respiration he opened a major artery to relieve the pressure in the enfeebled left ventricle and found that he could recover a much greater proportion of cases. The arteries he would prefer to open in man are the temporal. The experiments of Crile and Dolley have been already mentioned; by injecting two cubic centimetres of a saline solution of adrenalin (1 in 1000) into the femoral arteries of dogs five minutes after circulation had ceased and then performing artificial respiration they were able to resuscitate a great number of apparently dead animals. If the circulation had ceased for ten minutes they found it possible to restore the heart and respiration but not consciousness. The brain appears to die first.

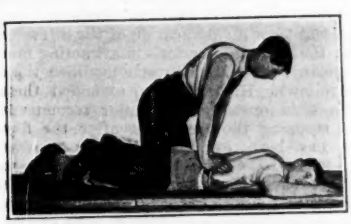
In 1889 the Royal Medical and Chirurgical Society instituted its fourth committee to consider the best means of recovery of the apparently drowned. Professor E. A. Schäfer was a member, but ultimately became the committee, and his report[5] read in 1903 is one of the most important contributions ever made to the literature of resuscitation. In his experiments he employed a more exact technique than had been used by those who had formerly investigated the means of resuscitation. To him we owe an accurate knowledge (1) of the large amount of water which may pass into, and be absorbed by, the lungs; (2) the small amount of the air expired in the act of drowning; (3) a standard method of estimating efficiency by stating the amount of air exchanged, not with each movement but in a given time—the five minutes' standard; (4) the employment of the living instead of the dead human body as the subject of experiment; and (5) a new process of artificial respiration—now well known as Schäfer's method.

It is possible that there are others besides myself who formed, in their first acquaintance with this method, a totally erroneous opinion of the mechanism underlying it. Schäfer's method is not a simple compression and expansion of the chest. The subject is placed face downwards (see Fig. 9), his chest resting directly on the table or floor. The operator kneels by the side or better astride the prone subject and places his hands over the lower ribs (tenth, eleventh, and twelfth) on each side of the spine (Fig. 9). To produce the expiratory movement the operator keeping his arms outstretched brings the weight of his body to bear on the lower dorsal region of the patient (Fig. 10).

FIG. 9.

Schäfer's method. Inspiratory phase.

FIG. 10.



Schäfer's method. Expiratory phase.

A weight varying from 50 to 90 pounds is thus applied. When the operator applies his weight to the subject's back and thus produces expiration, the head and chest are seen to move forwards along the floor or table, away from the operator to the extent of from 10 to 20 millimetres. The forward movement is due to the fact that the subject's body

[1] Lectures I. and II. were published in THE LANCET of March 13th (p. 745) and 20th (p. 825), 1909, respectively.

[2] Boston Medical and Surgical Journal, 1889, vol. cxx., pp. 9.

[3] Bulletin de l'Académie de Médecine, Paris, 1892, vol. xxviii., pp. 30, 156, 728.

[4] Brit. Med. Jour., 1896, vol. i., p. 203.

[5] Transactions of the Royal Medical and Chirurgical Society, 1904, p. 609; Proceedings of the Royal Society of Edinburgh, vol. xxv. part 1.

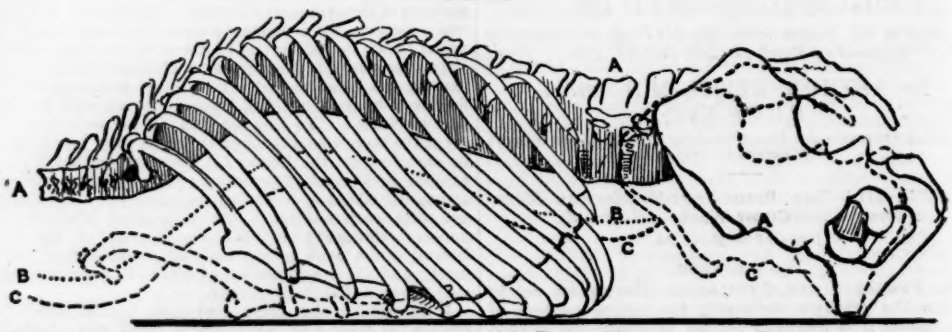
rests on the lower part of the sternum and costal cartilages of the longest ribs—chiefly the fifth, sixth, seventh, and eighth (see Fig. 11). These parts form the fulcrum on which the body moves. The longest ribs, already depressed to an expiratory position and set very obliquely to the axis of the spine (see figure), serve as levers on which the trunk rides forwards when the operator applies his weight to the spine. In Schäfer's expiratory manipulations the lungs are compressed: (1) by the abdominal viscera—especially the liver, spleen, and stomach, which are situated immediately under the operator's hands—being powerfully compressed and forced against the diaphragm and lungs; (2) the flattening of the anterior wall of the thorax formed by the yielding costal cartilages; and (3) by the ribs being thus brought into a position of ultra expiration and the chest compressed from back to front although it is widened from side to side (see Fig. 13). The recoil which occurs when the operator's weight is withdrawn and causes an inspiration to occur is due to (1) the strain thrown on the ribs and their costo-vertebral ligaments and ligaments of the spine, for there is a bending downwards of the spinal column in the dorso-lumbar region; (2) the recoil of the abdominal viscera to their normal position; and (3) the gradual unbending of the costal cartilages. There is also a rotation of the pelvis (see Fig. 11) and a flattening of the sternum; when the pressure is removed both of these parts instantly recoil to their inspiratory position. Inspiration results from the rebound which follows over-compression. In Howard's method, so in this, which is Howard's method with the body reversed in position, the respiratory movement is of the abdominal type. The abdominal viscera are exposed to a greater degree of pressure than in Howard's method. A powerful impetus is given to the blood content of the abdomen. Professor Schäfer found that each movement, tested on an apnœic living subject, gave a respiratory exchange of from 300 to 400 cubic centimetres.

At the present time a modification of the Silvester method—known as the Brosch-Silvester—is attracting much attention in Germany.[6] In 1897 Brosch modified the Silvester method as follows. He raised and extended the arms by the patient's head exactly as Silvester recommended, but in place of stopping the movement after the first degree of traction has been exercised he uses a considerable degree of force to continue the movement until the arms actually touch the table or ground on which the supine patient is placed. At the end of this movement the body is arched upwards so that it rests on the ground only at the shoulders and at the heels. The spine is over-extended. With the withdrawal of the operator's force the body recoils on the ground and the chest at the same time begins to collapse. The expiratory movement is completed by forcing the patient's arms against the chest, not towards the lateral aspect as advised by Silvester but directly over the sternum and yielding costal cartilages which are forced inwards so as to compress the lungs and heart.

[6] G. Meyer and A. Loewy: Berliner Medicinische Wochenschrift, June 15th, 1908, p. 1134; also 1909, No. 5.

Meyer and Loewy have recently (1908) carried out experiments on the efficiency of the Brosch-Silvester method. They followed Schäfer's example—as did Ploman the Swede—and tested it on the thorax of individuals rendered apnœic by a short period of deep breathing. They found that they could fill the lungs with from 1000 to 3000 cubic centimetres of air with each movement and effect a respiratory exchange varying from 7000 to 16,000 cubic centimetres per minute. Schäfer finds that he can produce a respiratory exchange of 5850 cubic centimetres with his method, an amount which he regards as amply sufficient for the purposes of resuscitation.

FIG. 11.



Skeleton from which the muscles were removed but ligaments retained. Three positions are shown: A, The specimen laid prone with the parts just touching the table. B, Position when the weight of the spine rests on the ribs. C, Position when a weight of 14 pounds is laid on the thorax. The rotation of the pelvis and flattening of the sternum are shown, but the movement of only one rib—viz., the first.

Professor Schäfer, as we have seen, in carrying out his investigations experimented on the living in place of the dead human subject. The men on whom he applied his method prepared themselves by a series of deep breaths so that, during the period of the experiment, they were able to submit themselves as passive apnœic subjects. Is the living subject a reliable substitute for an apparently drowned individual? May one, with security, expect to obtain the same respiratory exchange in the one as in the other? There is a marked difference in their conditions. The apparently drowned subject is in a state of profound anæsthesia; the muscles are relaxed and destitute of tone. In the living subject, the muscles, in spite of any voluntary effort to the contrary, control the movements of the ribs and the viscera. The muscles of an apparently drowned subject are, as regards their action on the ribs and respiratory organs, comparable to those of the dead. Certain it is that the resiliency of the thorax in the dead differs in degree and in kind from that found in the living body, a difference which I regard as due to muscular tone. In Figs. 13 and 14 I give in a diagrammatic form the results of experiments carried out on ten living and five dead subjects.[7] When the living subjects

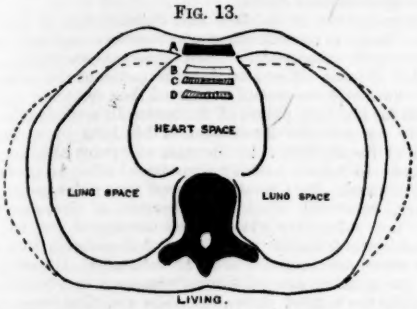
FIG. 12.

The inspiratory phase of Brosch's modification of the Silvester method. (From photograph by H. George.)

[7] See London Hospital Gazette, June, 1908.

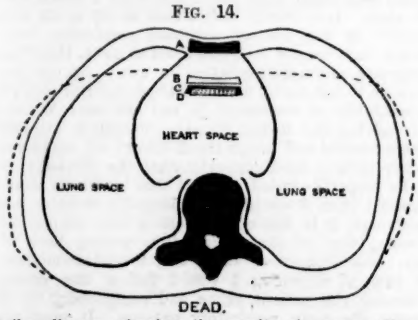
were turned from the supine to the prone position their chests were flattened to a much less degree than in the dead; when in the prone position with a weight of 28 pounds placed on the thorax to represent the pressure applied in Professor Schäfer's method, the thorax of the living was flattened to a still greater degree, while in the dead the further flattening was comparatively slight. The living body loses its resiliency to a much less degree than the dead when it is turned prone,

FIG. 13.



Transverse section of the thorax on which is represented the results of compression of the thorax in ten living subjects. A, The position of the sternum in the supine position. B, The position of the sternum in the prone position. C, The position of the sternum when a weight of 28 pounds is placed over the sternum in the supine position. D, The position of the sternum when a weight of 28 pounds is placed over the thorax in the prone position. The stippled line shows the increase in the transverse diameter of the thorax on turning the body from the supine to the prone position.

FIG. 14.



Similar diagram showing the results of corresponding measures applied to the thorax of five dead subjects. The figures also show the marked compression of the "heart space."

and since resiliency is the property which makes inspiration possible in the performance of artificial respiration the difference is an important one. The difference is due to the fact that in the living body the tone of the muscles which act on the ribs prevents the chest from flattening to the same extent as in the dead or anæsthetised.

Thus, in my opinion it is very improbable that Professor Schäfer's method will give a respiratory exchange in the apparently drowned at all equal to that which he obtained in living subjects; yet I think a sufficient exchange may be effected, and the method deserves to be tried because of its simplicity. In order that there may be no reasonable ground for scepticism left, I would strongly urge that those who are employed in the resuscitation of the apparently drowned at fixed stations where apparatus can be kept and applied should keep accurate records of the respiratory exchange effected in all cases. Such measurements can be taken by Zuntz's air meter without in any way interrupting the proper application of the means of recovery.

In 1908 the chief surgeon of the Metropolitan Police, Mr. Clinton T. Dent, requested the Royal Society of Medicine to advise him as to the best method of artificial respiration for the resuscitation of the apparently drowned. The Royal Life-Saving Society had by then boldly adopted the Schäfer method, the Royal Humane Society retained Silvester's, while the National Lifeboat Institution continued to recommend Marshall Hall's and Silvester's in the order named. A fifth Resuscitation Committee was constituted with Sir William Church as chairman. I had the honour to be elected a member. The result of the deliberations of that committee was to recommend Schäfer's method as preferable to Marshall Hall's or Silvester's.[8]

During the inquiries of the committee I became aware of the great mass of evidence contained in the records of the Royal Humane Society. I had grown up as a student believing that artificial respiration was absolutely essential for the recovery of the apparently drowned, and was therefore surprised when Major Claughton, the secretary of the Royal Humane Society, informed me that numerous cases of recovery had been effected after periods of immersion lasting for more than four minutes without the aid of artificial respiration. My inclination to investigate these records was stimulated by the fact that Hunter had been instrumental in causing them to be kept. I wished also to see what results had followed the practice followed in the various periods of the society's history. Major Claughton very kindly extracted for me 504 cases of resuscitation from the records of the last four years. With each case he gave me the age, sex, estimated time of submersion, condition on rescue, process employed in resuscitation, length of time artificial respiration was performed, the result, and remarks. In a considerable number of cases the time of submersion could not be estimated.

In these 504 cases there were 63 in which artificial respiration had been unsuccessfully applied. From 1903 to 1907 there were thus 12·5 per cent. of cases in which the means applied failed to bring the patient round. How these results compare with former periods is set forth in the following table, the numbers given having been obtained from the annual reports of the Royal Humane Society:—

Period.	Chief means employed.	Successful cases.	Unsuccessful cases.
1774–1793	Warmth. Fumigation. Inflation.	959	747 = 43·7%
1773–1778 (in France).	Inflation.	813	121 = 11%
1795–1811	Warmth. Inflation (bellows.)	2470	3018 = 54·8%
1821–1826 (in France).	Inflation. Warmth.	283	85 = 34%
1832–1851*	Warmth. Friction.	2152	217 = 10%
1865–1876†	Artificial respiration. Warmth.	2487	202 = 8·1%
1848–1860‡	Warmth. Friction.	165	97 = 37%
1856–1860‡	Artificial respiration.	38	34 = 47·2%
1903–1907	Artificial respiration. Warmth. Friction.	441	63 = 12·5

* Thirteen years taken at random between 1832 and 1851.
† Eight years taken at random between these dates.
‡ Figures given by Dr. Christian for cases in Hyde Park.

Glancing over that table it will be seen that the latter part of the eighteenth and the opening part of the nineteenth centuries form a period in which the means for resuscitation were the least successful. In that period artificial respiration was performed by the bellows and over 50 per cent. of the cases were not recovered. In the period just previous to that (1774–1793), when artificial respiration, if applied at all, took the form of mouth-to-mouth inflation, the percentage of failures was 10 per cent. less. With the omission of artificial respiration from the official list of instructions issued by the society the failures drop from 50 to 10 per cent.; with the introduction of the mechanical methods of respiration the failures amount to only 8 per cent.; during the last four years (1903–1907) the percentage has risen to 12 per cent. These percentages to have any value whatsoever must be drawn from groups of drowned people which are directly comparable. There are strong reasons for believing that the cases included in the earlier reports are not comparable to

[8] Report of Fifth Resuscitation Committee, Proceedings of the Royal Society of Medicine, 1908, vol. ii., p. 1.

the latter groups. The Royal Humane Society took cognisance of only those cases which occurred in or near London in the earlier period of its existence, but it gradually extended the scope of its labours, and I suspect that the cases of rescue and of resuscitation reported from a distance in the later periods were chiefly those which were successfully resuscitated. The statement made by its medical officer, Dr. Christian, in 1860, gives one grounds for such an inference. While the percentage of failures of all cases reported to the society amounted to about 10, Dr. Christian's failures amounted to 37 per cent. At the opening period of resuscitation in France 11 per cent. of cases were unsuccessful; a later period, when the bellows were more freely used, the failures rose to 34 per cent. Magendie attributed the increase to the use of the bellows. The inference, however, which may be justly drawn from the above figures—allowing for a considerable discrepancy in the material compared—is that the value of artificial respiration as a means of recovering apparently dead people is overestimated, for during a period in which artificial respiration was very little employed, the percentage of failures was smaller than it is now, when it is regarded as the essential—almost the only—means. Laborde claims success for his method in which artificial respiration is not used.

In order to ascertain the present-day practice in the recovery of the apparently drowned I tabulated the means applied in the 504 cases given to me by Major Claughton. In some cases two or even three methods were tried; I have added all the methods used in such cases, so that the number of methods in the following list is really greater than the number of cases on which they were tried.

Methods used.	Number of cases in which applied.	Methods used.	Number of cases in which applied.
Silvester's method ...	237	Tongue traction	5
Artificial respiration (method not stated)...	180	Movements and traction of the arms and legs	48
Marshall Hall's method	3	Friction of the body	30
Howard's method ...	3	Slapping the body ...	2
Silvester-Howard method	5	Injection of strychnine...	2
Schäfer's method ...	5	Emetics	3
Rolling the body... ...	9	Warmth	7
Compression of the body	9	Stimulation of nose ...	5
Inversion of the body	26	Laying on belly across wall or fence	2

Thus it will be seen that there still exist throughout the country certain ancient methods of resuscitation which have been condemned for a century and more by the Royal Humane Society—viz., rolling, moving the body by the arms and legs, laying the body across a support (the barrel method), emetics, and holding up by the heels or inversion. Not one of these cases where forbidden methods were applied resulted in failure.

It is of interest to observe the means employed in the 63 unsuccessful cases. In every one of them artificial respiration was performed; in 18 Silvester's method; in four Silvester's combined with another; and in 41 "artificial respiration" is said to have been applied. Now in the whole group of cases Silvester's method was applied to 237 and "artificial respiration" to only 180, therefore the number of failures with the Silvester method ought to have been considerably greater in the cases on which it was performed than in the smaller group where "artificial respiration" was employed, but the reverse is the case; almost twice the number of failures fall amongst the cases in which "artificial respiration" was used. The operator who employs the term artificial respiration probably does not know the name of the method he employed and more than likely does not know how to apply any method properly. It is indeed highly probable that more cases are lost by artificial respiration being wrongly applied than by no artificial respiration being applied at all.

The length of the period of submersion does not explain all the failures to resuscitate, as the following table shows:—

	Periods of submersion.			
	1 to 5 minutes.	6 to 10 minutes.	11 to 15 minutes.	over 15 minutes.
Successful cases	234	89	14	4
Unsuccessful cases... ...	13 (5·2%)	21 (19%)	12 (46·1%)	16 (80%)

With the increase in the period of submersion the proportion of failures becomes greater, but the period of submersion does not account for a considerable number of cases. There are clearly some lost which ought to be saved, but we cannot save until we know how and why they are lost. The aged are not recovered with the same success as younger people. We need, above all things, more accurate observations when means are being applied to the apparently drowned, and are urgently in need of pathological observations when the means applied have failed.

The researches of Haldane and Priestley and of Hill and Flack[9] assist us to understand why recovery may occur after a prolonged submersion. Their observations seem to me capable of being utilised by those in imminent risk of drowning. Vernon[10] has recently observed that he could hold his breath for the long period of 8 minutes 13 seconds if he previously renewed the air-content of his lung by a vigorous series of respirations. In the state of apnœa thus acquired he ought to be successfully resuscitated after an immersion of 12 minutes. It is usually believed that cases are seldom, if ever, recovered after an immersion of five minutes.[11] With the pulmonary system well ventilated one may yet recover after a longer period and it is probable that those cases which are recovered after an immersion, alleged to be over ten minutes, are individuals who were in a condition of apnœa at the time of drowning. The practical lesson to be drawn from these facts is that those in imminent risk of drowning should prepare for a possible rescue in filling or emptying their lungs with vigor just before immersion, so that the state of apnœa thus produced may tide life over a period of from 10 to 12 minutes in place of the usual limited space of 4 or 5 minutes.

If in a few words I may sum up the chief conclusions which my inquiries into the past and present practice of artificial respiration have led me to form I would set them down thus. It is really only 1 case in 20 or 30 which is recovered by the aid of artificial respiration but that twentieth case cannot be recognised at sight, therefore it is necessary to perform respiration in every one; if properly performed it can do no harm; if improperly, it may destroy the possibility of recovery. If you ask me: Would I, if asked, advise the Royal Humane Society to abandon the Silvester method and adopt the Schäfer? I would answer, No; but with a condition—viz., that the Silvester method must be properly carried out. If that condition cannot be guaranteed then I would recommend the Schäfer method, for although it is less effective it is also simpler, and in one sense, that of obstruction from falling back of the tongue, less dangerous than the Silvester method. In every case of drowning I would follow the custom of first turning the patient prone and compressing the thorax to empty the main respiratory passage. It must not be supposed that the Schäfer method is free from danger. It is said, but I have been unable to find a sure foundation for the statement, that the engorged liver has been ruptured in performing the Howard method; if that is so then the danger is as great or even greater in the Schäfer method, for to the weight of the operator is added that of the

[9] Journal of Physiology, 1908, vol. xxxvii., p. 77.

[10] Nature, Feb. 18th, 1909, p. 458.

[11] During the delivery of these lectures Mr. William Henry, chief secretary of the Royal Life Saving Society, sent me the following valuable observations: "The experience I have had leads me to believe that the length of time one may stay under water depends upon several conditions. For instance, a stout person would probably be dead long before the expiration of three minutes. A thin person can nearly always stay under water for a longer period than a stout one. I know of a properly recorded case, when I personally timed the test of a young female who remained under water 4 minutes 42½ seconds; she regularly stayed for 3 minutes 30 seconds. There are also many recorded cases of men and women staying regularly under water for 3 to 4 minutes; the best case of a man is 4 minutes 29½ seconds, but in each case these people for some time prior to taking the test remained quite calm. On the other hand a person who may be in danger of drowning may struggle and the greater the struggling the quicker they will, in my opinion, become insensible. The reason for this is obvious, but in the case of a stout person, as compared with a thin one, some other reasons may be advanced. I know people who only inhale 150 to 160 cubic centimetres of air and others who register 370 cubic centimetres, yet the former have stayed under water much longer and with less inconvenience than the latter. I have a case in point where one person weighing about 8 stones inhaled 155 cubic centimetres of air and stayed under water 3 minutes 30 seconds; the other weighed 14 stones and inhaling 373 cubic centimetres was nearly insensible after 1 minute 10 seconds. The latter was not twice the weight of the former but was able to register more than twice the amount of air, yet could only stay under water one-third of the time. These are interesting points which may have some bearing on the subject of drowning."

patient's own body. My mind is also open to the conviction that the ancient method of mouth-to-mouth insufflation with expiratory compression of the chest may not prove more effective than either; at least, if it should happen that I may be found in an apparently drowned condition I sincerely hope that my rescuer will apply this prompt method to me as my first aid. It is air that my lungs and blood then will stand urgently in need of, not pressure, for if the pulmonary circulation has ceased such pressure is, upon the evidence at present at our disposal, more likely to weaken than to strengthen the heart. With the patient in the prone position the operator will have great difficulty in knowing whether or not air is entering and leaving the lungs freely; with direct inflation one knows the effect immediately by placing the hand on the epigastrium; the hand is also needed there to produce expiration.

I want to leave the impression on your minds that the quest for the best means of artificial respiration is by no means ended; we need more experimental evidence, more exact data as to the results of methods now in general application, more clinical observation on the lungs and hearts of people being resuscitated, and more exact data on the condition of the body, and more particularly of the lungs, heart, and liver in those cases where all means have failed or where secondary failure has occurred (seven cases out of 504 died after regaining consciousness—cause of death unknown). Especially would I beg of those who are frequently engaged at fixed stations in the work of recovery to measure accurately by a meter the air exchange effected by the methods which they apply, so that instead of having to trust to experiments carried out on perfectly healthy apnœic individuals we may have the actual effect of these methods in producing a ventilation in the lungs of the apparently drowned.

ABSTRACT OF THE

Hunterian Lecture

ON

TUMOUR-LIKE FORMATIONS OF FAT IN MAN AND THE LOWER ANIMALS.

Delivered at the Royal College of Surgeons of England on March 15th, 1909,

By S. G. SHATTOCK, F.R.C.S.,

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[THE lecturer took first the subject of steatopygy. The accumulation of fat on the buttock of the Bushman and Hottentot had of late attracted renewed attention by reason of its having been found represented in prehistoric times, not only in Africa, but in the countries bordering the north of the Mediterranean. The form represented in the predynastic Egyptian clay figures involved chiefly the thighs, which were monstrously enlarged as far as the knees. Sir Harry Johnston had observed a *lateral* enlargement among the Nile negroes. These variations were somewhat paralleled by those occurring amongst fat-tailed and fat-rumped sheep. Professor Petrie had interpreted the discovery of steatopygous figures in the Brassempouy caves of the South of France, in Malta, and elsewhere as indicating the original distribution of a Bushman race in these regions, as well as in the North of Africa. The accumulations were to be regarded as of the nature of food reserve, like those of the camel, and their transmission was perhaps partly due to natural, as well as to sexual, selection. The well-known hump of the zebu consisted of muscular tissue, and was a protein more than a fat reserve; at least, no other function could as yet be assigned to it. As examples of the storage of fat in the tail, the lecturer referred to certain fat-tailed dasyures met with in the arid parts of Central Australia. But the fat-tailed sheep offered the most striking examples. In some the tail reached the ground, in others it was so broad as to overlap the buttocks without descending below them; in other sheep the tail was diminutive and the fat was on the buttock. When the fat-tailed sheep of the Kirghiz tribes were transferred to the Steppes of Russia the fat was removed and not replaced. Fat was also stored between the muscles in the tails of certain lizards. Wherever it was found, fat was to be regarded as food reserve, utilisable for supplying energy to the various working organs. Its wide distribution in the body was quite comparable to that of starch in the vegetable kingdom, and in the latter the store might also take on a tumour-like character, as instanced in tubers and corms. Reference was next made to the fat masses in the necks of cretins, originally described by Curling, the lecturer pointing out that these corresponded in position with the so-called hybernating gland of the hedgehog, and saying that he had been led from this consideration some while ago to see whether the fat normally present in the human neck in this position was of a special kind. This question he had independently answered in the affirmative, although the first publication of a similar observation had been made by Hatai. He proceeded:—]

Besides tumour-like accumulations of adipose tissue which serve as food stores there is a further function served by fat in one position in the human subject which is altogether of a different character and where it is primarily mechanical. The position in question is the cheek, in which in the newborn there is a spherical mass of fat which lies upon the buccinator muscle immediately in front of the masseter, and though elsewhere surrounded by the subcutaneous fat is quite isolated and distinct from it.

Virchow, in his incomparable work "Die Krankhaften Geschwülste" (1863), has drawn attention to the fact that this body was described so long ago as 1741 by Heister who regarded it, however, as a gland, and named it the "Glandula Molaris." More fully, as Virchow notices, it was described in 1853 by Gehewe in an inaugural thesis entitled "De corpusculo quodam adiposo in hominum genis obvio," Dorpat. The reason why it finds a place in Virchow's work is that the body in question may give rise to a lipoma in the cheek which simulates a parotid tumour. Gehewe was the first to point out that the purpose served by this ball of fat is to prevent the cheek from being drawn in between the jaws during the act of sucking. Bichat at the beginning of the nineteenth century had described it correctly as consisting of fat, but without perceiving its function.

The article by Ranke[1] contains references to the work of all previous observers, and is well illustrated, although anatomically it adds nothing material to the previous descriptions. Ranke, in accordance with the function assigned to the fat mass, has named it the "Saugpolster" or sucking cushion. The interesting physiological observation added by that author is that the fat of the cushion does not undergo absorption during emaciation. He commences his dissertation, indeed, by remarking that in children in whom wasting occurs during the first year of life from diarrhœa one often sees, when the greater part of the subcutaneous fat has disappeared in both cheeks, a small swelling in the neighbourhood of the Stenonian duct about the size of a split hazel-nut; when pressed between the fingers from within and outside the mouth it feels soft, somewhat like a cyst.

The sucking cushion persists in the adult though in a less pronounced form; and it is attached by a pedicle to the canine fossa. It is most readily displayed by means of a horizontal section carried through the face between the upper and lower dental arches. So well defined is it that it readily allows of being enucleated from the proper fat of the cheek. Gehewe[2] found it clearly present in the fœtus as early as the fourth month. This I can confirm: at this age it is represented by a minute collection of fat lobules recognisable by means of a hand lens. And one can easily demonstrate it by means of a horizontal section at all intrauterine ages afterwards. Microscopical examination shows the adipose tissue of the cushion to be identical in structure with that of the surrounding fat of the cheek, from which it is separated by a thin layer of connective tissue.

That the circulation or blood-supply of the cushion is peculiar appears from an observation which I had the opportunity of making upon a new-born child at term who died from prolapse and strangulation of the umbilical cord. On cutting the cheeks horizontally between the dental arches the two cushions stood out in a striking manner, being of a deep blackish-red colour from engorgement, whilst the fat

[1] Virchow's Archiv, Band xcvii., Heft 4.
[2] Gehewe: Loc. cit.

around was quite pale; they were each two centimetres in chief diameter and so well encapsulated that their mere weight almost brought about their enucleation. I have seen the same thing in a second case.

Ranke remarks[3] that it would be of interest to determine whether the cushion is present or not in the anthropoid apes. As examples of such I have been able to examine from the College stores the heads of two infant chimpanzees (*Anthropopitheous troglodytes*). One of these, a female, had no teeth erupted; the umbilical cord was separated and the cicatrix formed. From the vertex to the tip of the coccyx the measurement was ten inches. In the horizontal section carried through the cheek between the jaws no sucking cushion was displayed, nor was any fat discernible to the eye in the subcutaneous tissue of the cheek; nor was there any in that of the buttock or front of the thigh. Nevertheless, a microscopic section of the parts revealed the presence of a group of fat cells in the position of the cushion and evidently its representative. In the second specimen the central incisors, both upper and lower, were just appearing through the gum. In the proper anatomical position there is a circumscribed sucking cushion seven millimetres in diameter. There is a thin layer of subcutaneous fat on its outer side which extends for a short distance forwards in the cheek.

Passing lower down the scale. In a stillborn Sacred Baboon in which the umbilical cord was still attached, and the fœtus at term, I found on making the usual horizontal section that the sucking cushion was well differentiated though not large. There was very little subcutaneous fat over the buccinator; the cushion is sharply encapsulated, spherical, not more than six millimetres in diameter, and lies immediately in front of the anterior border of the masseter muscle. Notwithstanding its presence there is in both the chimpanzee and the baboon a complete absence of the rotundity of the cheek which is so pronounced in the human fœtus at birth, and which is indeed a peculiarly human feature. The absence of this rotundity in the chimpanzee and baboon is due partly to the small amount of fat there is in the subcutaneous tissue of the cheek in general, and partly to the stretch or length of cheek itself arising from the extreme prognathism of the simian face, the sucking cushions lying at the most posterior part of the cheek, and being, moreover, of relatively small size as compared with those in the human infant.

Why the fat of the sucking cushion should withstand absorption during the emaciation of the rest of the body has not been satisfactorily explained. One may suppose that the mechanical function of bearing a higher degree of intermittent pressure than the surrounding fat leads to an increased vascularity, and associated with this one has to remember the isolation of the mass and the narrowness of its attachment. Absorption would less readily occur through the vessels of such a pedicle than in the case of the general subcutaneous fat, the vascular connexions of which with the surrounding parts are more intimate.

Mr. A. Mavrogordato was good enough to make a comparative examination of the fat of the cushion and the adjoining fat of the cheek. The fat was saponified, the fatty acids liberated by means of sulphuric acid, &c., and the iodine value of the purified acids estimated; their iodine value was the same.

[3] Ranke: Loc. cit.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

An extraordinary Comitia was held on March 19th. In the absence of the President Dr. Norman Moore occupied the chair. A report, dated March 5th, was received from the delegates of the two Colleges appointed to consider a scheme of conjoint examinations under Statute 123 of the University of London. The report was as follows: "The delegates beg to recommend that they be authorised by the Royal Colleges to confer with representatives of the medical schools in London and other bodies on the University question." On the motion of Sir W. H. Allchin, seconded by the registrar (Dr. E. Liveing), the report was adopted. The rest of the business on the agenda was declared to be *secreta Collegii*. The chairman then dissolved the Comitia.

ON SOME ABNORMALITIES OF OCULAR MOVEMENTS,

WITH PARTICULAR REFERENCE TO "ERRONEOUS PROJECTION" IN CASES OF PARALYSIS OF MUSCLES OF THE EYE-BALL, ESPECIALLY IN CASES OF PARALYSIS OF AN EXTERNAL RECTUS—OUT-GOING (CENTRO-PERIPHERAL) *v.* IN-GOING (PERIPHERO-CENTRAL) CURRENTS.

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PART I.—*Preliminaries.*

IN a case of paralysis of an external rectus, suppose that of the right eye, there is, when the patient looks at an object on his right, "erroneous projection" of that object, seeming displacement of it to the right. This symptom has been attributed, in accordance with a theory (we shall call it the "out-going theory") held by Bain and Wundt, to a greater degree than ordinary of the "out-going, a centro-peripheral, current," a current from cerebral motor centres. The following, a translation by one of us (L. P.) from Helmholtz's "Handbuch der Physiologischen Optik," second edition, 1896, is a statement of "the out-going theory." (No italics in original):—

"We ascribe then the direction of our line of vision either to the actual placing of the globe itself or to the correlated lengthening or shortening of the eye muscles. That we do not also ascribe the direction of the line of vision to the tension of the eye muscle is because, in those cases in which paralyses of single eye muscles suddenly take place the patients, if they try to move their eye in that direction in which movements no longer can take place, see false movements which produce double pictures when the other eye is opened. If, for example, the external rectus of the right eye or its nerve is paralysed, that eye can no longer be moved over to the right side. So long as the patient turns it only to the inner side it makes normal movements and he has a true sense of the direction of objects in his field of vision. As soon as he seeks to turn it outwards to the right it no longer obeys his will, but remains stationary in the middle line, and objects are seemingly displaced to the right although the position of the eye and of the retinal picture in the eye remains unaltered. In such a case of a paralysed muscle there follows as a result of the act of volition neither movement of the eye nor contraction of the muscle which should contract, nor even an increased tension in this muscle. The volitional impulse has no result at all outside the nervous system, and yet we judge the direction of the line of vision as if the act of willing had produced its normal consequences; we believe that the visual axis in the example taken has been displaced to the right and since the position of the retinal image on the retina of the paralysed eye remains unaltered, it appears to us as if the objects had made this erroneously assumed movement of the globe.

"If the paralysis is not complete so that the eye can still fix an object lying a little to the outside, but requires for that purpose a greater amount of nerve stimulus to the paretic muscle than is usual, there again arises a false conception of the direction of the visual axis, and of the position of the object, as one can learn if we ask the patient to grasp quickly at the object. He *grasps* at first beyond the object.

"*These phenomena place it beyond doubt that we judge the direction of the visual axis only by the volitional act by means of which we seek to alter the position of the eyes.*"

There is another theory, one very different from that stated in the quotation just given. This second theory, we may call it the "in-going theory," that of periphero-central currents, is the one which in these days is most widely accepted. Indeed, in regard to the first theory, "the out-going theory," Titchener in his "An Outline of Psychology," p. 247, says "there is no such thing as a motor-cell sensation, a sensation corresponding to the innervation of a muscle or group of muscles."

In this article we consider the rival theories "in-going *v.* out-going" only in regard to ocular movements and to certain symptoms of paralysis of some of the muscles of the eyeball. It may be well to add that the concern which any muscles, and any sensory or motor centres in relation with the double innervation of muscles, have, or may have, either in the estimation of weight or of degrees of resistance is not considered in this article. One of us (J. H. J.) has long held the doctrine that the "out-going" current, a motor cerebral current, is concerned in the physical processes during the exteriorisation and the placings of images (percepts standing

for what we call external objects) and with the physical processes during referrings of "sensations" to parts of the body.

Before going further, something must be said about the two expressions, "muscles" and "movements of muscles," with limitation of remark to the ocular musculature. The expression "movements of muscles" has a clumsy sound, but it is difficult to avoid using some such expression. It must be well kept in mind that muscles are not represented in their individual character by motor centres but as they are combined into movements; the same muscles are represented in different centres in different combinations, that is in movements of different kinds; using a poor analogy, as different tunes are playable on the same keys of a piano.

More particularly, and for the present speaking with disregard of centres of the Cerebellar Sub-system, there are different orders of representation of movements of ocular muscles in centres of all levels of the Cerebral Sub-system (it must, however, be said that the lowest level belongs to both sub-systems; it is cerebro-cerebellar). It is suggested (J. H. J.) that there is a first representation of ocular muscles in simple movements, a "nuclear representation" of them, in the lowest level[1] (by certain centres (nuclei) of the "true spinal system" of Marshall Hall). Presumably these nuclei, some lowest level (cerebro-cerebellar) motor centres are those morbidly affected in cases of ophthalmoplegia externa. No doubt they were the centres damaged in the case of George D., detailed in Part V., and possibly there was a similar location of lesion in a case Mr. Priestley Smith refers to which will be mentioned again later. A further suggestion is that there is a second, an indirect, representation (a re-representation) of ocular muscles in more complex movements by centres of the middle level ("motor region" of the cortex cerebri). The ocular paralysis or, better, the movement of the eyes lost, which permits lateral deviation of the eyes from the side of the body paralysed in cases of ordinary cerebral hemiplegia, is due either to disease of, or of part of, the middle level or to a lesion (of the internal capsule) which cuts the middle level off from lower, lowest level, centres. Still another suggestion is that there is a third, a doubly indirect, a still more complex, representation (a re-re-representation) of movements of the ocular muscles in the highest level (præfrontal lobe); from the third level, the highest level (the "mental centres"), motor impulses depart and reach the oculo-motor periphery by intermediation of the middle and lowest levels.

Movements of both eyes in conjunction are represented in each half of the brain. Those which are most specially represented, or represented in greatest number, in cerebral centres are lateral movements, movements of both eyes during looking to right or to left; but other kinds of movements of ocular muscles are represented in each half of the brain. As one of us (J. H. J.) has remarked in THE LANCET of April 28th, 1894, "..... every movement called voluntary will be represented in the cerebral hemispheres, and thus there must be representation in them of all ocular movements a man can effect when he tries. I asked Dr. Risien Russell to make researches on this matter. At my suggestion he cut the right external rectus and the left internal rectus of a monkey, thus rendering movements of the two eyes to the right impossible. Upon faradic excitation of the animal's left cortical eye area the eyes turned directly upwards or directly downwards according to the particular part of the eye area stimulated." Dr. Risien Russell has published an account of his researches (on the cortical representation of movements of ocular muscles) in two valuable papers in the *Journal of Physiology*, Vol. XVII., Nos. 1 and 5, 1894.

In some cases of the common form of cerebral hemiplegia there is, as was first pointed out by Vulpian and Prevost, conjugate deviation of both eyes from the side paralysed: the implied cerebral motor nervous arrangements in healthy people, those destroyed in cerebral hemiplegia, with the movement they represent, have been likened by M. Foville to the arrangement of reins, each with two slips, for driving a pair of horses. There is in many of the cases of hemiplegia mentioned, turning of the head to the side to which the eyes turn, but here we deal only with turning of the eyes. In left hemiplegia the turning of the eyes is to the right and this is due to a particular paralytic condition, that is to say, to loss of cerebral motor nervous arrangements for the movement of turning both eyes to the left. In a convulsion, one due to cortical disease, of, or beginning in a part of, the left side of the body, and of extensive range, the turning of the eyes is to the left and is owing to an over-development of that movement of the eyes which is lost in cases of left cerebral hemiplegia; when such a convulsion is over the eyes may be temporarily turned to the right[2]; this post-paroxysmal turning is an indirect consequence of exhaustion by the intense, an epileptic, discharge of those nervous arrangements which in the paroxysm produces turning of the eyes to the left.[3]

Mr. Priestley Smith has considered abnormalities of ocular movements and paralyses of ocular muscles in several valuable papers. The following remarks by him bear closely on the dictum that ocular muscles are represented by motor centres in different combinations, that is as different movements. In Heath's Dictionary of Practical Surgery, vol. ii., p. 87, in an article entitled "Affections of the Ocular Muscles," Mr. Smith, in regard to conjugate lateral deviation of both eyes in cases of hemiplegia, wrote: "Although the two recti which are concerned in this paralysis are totally inactive for conjugate movements, they may remain active for convergent and divergent movements; thus in a case observed by the writer (Roy. Lond. Ophth. Hosp. Reports, Vol. VIII., p. 185) neither eye could to the smallest extent follow the movement of an object moved laterally before the patient's face, but both eyes performed movements of convergence when the object was moved from a farther to a nearer point, in line with the oblique direction of the eyes."

Wherever, in whatever level, the lesion may have been in the case Mr. Priestley Smith investigated, its symptomatology showed that as a consequence of disease, ocular muscles may not serve for the execution of certain movements and may yet serve in the execution of movements of other kinds.

Although in this article we deal with cerebral representations, and sometimes with lowest level representations, of movements of ocular muscles, cerebellar representations of movements of those muscles are of great importance in neurology, especially in medical neurology; the researches of Ferrier in this regard are well known. A reference to important researches by Dr. R. H. Clarke and Sir Victor Horsley on cerebellar movements of ocular muscles, will be found in *Brain*, Part 116 (1906), pp. 463 et seq. Sir Victor's observations on what he calls "the temporo-cerebellar complex" raise the question of orientation or, to use his words, "the locomotory appreciation of distance and position in space," to a higher plane by showing certain relations between a part of the cerebrum, the temporal lobe, and parts of the cerebellum and the bearing of these relations on a higher and wider research.

When speaking of the process of development of movements of muscles, the masterly researches of Sherrington on

[1] Only the motor divisions of levels are dealt with in the text.

[2] See a very important contribution to neurology by the late Dr. Charles Beevor, Brain, vol. v., pp. 56 and seq., in which he dealt with "Post-epileptic Conjugate Deviation of the Eyes."

[3] In an old paper, Brit. Med. Jour., June 2nd, 1877, one of us (J. H. J.) has written, in perhaps too ridiculous a jumble of terms, as follows, after reference to M. Foville's remark. "What occurs in the lateral deviation [in hemiplegia] is analogous to dropping one rein (the right one, we will suppose); then the heads of the horses (supposing the left rein to be, so to speak, in tone) turn to the left. Here the secondary deviation in paralysis of the external rectus may be illustrated. Using a clumsy mixture of illustrative terms, we may say that when the centre for one rein energises strongly, the current developed cannot reach the head of the horse on the right, as the slip of rein to that side is paralysed; but in the effort to make it move, a strong current passes by the other slip to the head of the horse on the left—that horse's head undergoes strong 'secondary' deviation. The lateral deviation shows that after the nerve-fibres of the ocular nerve-trunks have entered the central system (if we may, for convenience, trace them backwards way) they are—partly probably by the intermediation of several centres—redistributed. It shows that far above their points of entrance, or rather exit, the nerve-fibres of the ocular muscles are rearranged in each cerebral hemisphere in complex ways for particular movements of both eyeballs. There is no such thing as paralysis of the muscles applied by the third nerve, or sixth nerve, from disease above the crus cerebri." It must be kept well in mind that the cases of hemiplegia dealt with in the text are cases of *cerebral* hemiplegia. In a man with right hemiplegia from disease of the pons varolii (a case which one of us [J. H. J.] recorded, Medical Times and Gazette, Jan. 3rd, 1874) *both eyes were turned to the side of the body paralysed.* The convulsions dealt with in the text are those from cortical discharges. One of us (J. H. J.) has mentioned, Transactions of the Ophthalmological Society, Vol. vii., 1887, p. 276, the case of a woman in whom there were convulsions, to some extent the occasional "mobile opposites" of the permanent paralysis in the case of the man mentioned above, the case of hemiplegia from disease of the pons varolii; in her there were paroxysms of "lazy clonic, almost tonic," spasm of the right side of the face and turning of both eyes to the left.

Reciprocal Innervation have to be considered. The following quotation is from his book, "The Integrative Action of the Nervous System," p. 280. "If III. and IV. cranial nerves of one side, e.g., left, have been severed, so that *rectus externus* remains the only unparalysed ocular muscle, appropriate excitation of the *cortex cerebri* produces conjugate movement of both eyes towards the opposite side—i.e., from left toward right, the left eye *travelling, however, only so far as the median line* (not italics in original). Inhibition of the tonus and of the active contraction of *rectus externus* can thus be elicited from the cortex." Borrowing from what C. S. Myers writes (p. 225 of his "A Text-book of Experimental Psychology"), we add to the foregoing "normally the contraction of one group of ocular muscles is accompanied by active relaxation or inhibition of the opposing group of muscles."[4] Sherrington's researches deserve very careful consideration from medical neurologists. It has been said that upholders of what the writers of this article call "the out-going explanation" of erroneous projection in a case of paralysis of a right external rectus, neglect the effects due to the relaxation of the internal rectus of the right eye.

It will be convenient, for simplification of exposition, to speak in many parts of this article of ocular muscles when we are dealing with what are really ocular movements or, as we might say, when we are speaking of inabilities of lowest level oculo-motor or of higher level oculo-motor centres, to make, or to make completely, some particular ocular movement. Yet it is to be kept in mind that in most of the cases of paralysis we deal with, say paralysis of an external rectus, the whole of the nervous system is supposed to be healthy with the exception of disease of a small nerve trunk, the right sixth cranial nerve. Nevertheless the whole nervous system, or rather certain elements of every level and interconnexions of levels by nerve fibres (the sixth cranial nerve excepted) is engaged when the patient, whose right external rectus is paralysed, looks to the right when told to do so, and who whilst doing so has the three symptoms, diplopia, secondary deviation and erroneous projection; certain parts of the central nervous system are only abnormally engaged in the sense of being *super*-normally, hyper-physiologically, engaged, they are not affected by any pathological process. This case is the best which can be given to show what is meant by the term "Physiological Factor" in symptomatologies of nervous maladies.

When considering movements of muscles, something should be said of muscle-spindles. It has been stated that ocular muscles have no spindles. But recently Dr. Farquhar Buzzard[5] has discovered spindles in these muscles. He divides his observations into two parts, "(1) The very occasional presence of easily recognised muscle-spindles in ocular muscles, and (2) the possibility that there are modified forms of spindles in ocular muscles as a general rule."

We now come to a more direct consideration of the "in-going theory."

Recapitulating, we take for illustration the case of a man whose right external rectus is paralysed from disease of the sixth cranial nerve trunk supplying that muscle. When this patient tries to look to his right—motor cerebral discharge of nervous arrangements for moving both eyes in parallelism to the right—his right eye *does not go out*, the way being blocked by a destruction lesion of some part of the course of the nerve trunk to the external rectus, but the patient's left eye *goes in too much*, from too great contraction of the *left internal rectus*, a muscle supplied by a twig from the intact left third nerve; this over-contraction is the symptom which ophthalmic surgeons call "secondary deviation." The left eye may be covered during the investigation, but since convergence[6] of even a closed eye helps to determine the sense of direction, the "erroneous projection" in cases of paralysis of the right external rectus has been ascribed to abnormally great "in-going currents,"—to currents arising from the over-contraction of, and to abnormally great periphero-central currents from, the *left internal rectus*. This explanation—"the in-going theory" we have called it—was suggested by Professor E. Müller[7] and a little later by William James of Boston, U.S.A.[8]

It occurred to one of us (J. H. J.) to test the "in-going theory" in a way to be now very briefly described; this is done only in order to state the first of three steps in an investigation. By an appropriately applied prism some of the effects of paralysis of an external rectus, we shall suppose the right, can be imitated. We say some of the effects because there is an exceedingly important difference between this "imitation paralysis" of the muscle and "veritable paralysis" of it from disease of the sixth cranial nerve. The man in the "prism experiment" is in a normal condition until the prism is placed before his right eye; with the prism over the right eye there is, when he tries to look to the right—when, so to say, he tries to overcome the prism—abnormally great turning in, technically, "secondary deviation," of the left, the closed, eye and there is "erroneous projection" of objects to the right. So far there will be no obvious difference in the two symptoms ("secondary deviation" and "erroneous projection") from those in a case of "veritable paralysis" of the right external rectus. But in the "prism paralysis" the right external rectus muscle is neither motorily nor sensorily cut off from the central nervous system, whilst in the veritable paralysis that muscle is motorily cut off from that system; and it is, in effect, sensorily cut off too since no contractions of it can occur to set up sensory currents from it to any centres. Indeed, there will be in the "prism paralysis" abnormally strong activity of the right external rectus, of which muscle there is the so-called "imitation paralysis," and thus there will be stronger in-going currents from the muscle. There will, moreover, be abnormally strong in-going currents from the over-contracting *left* internal rectus. Thus the prism experimentation on a normal man in regard to the "out-going *v.* in-going theories" is not trustworthy (see remarks by L. P. close of Part IV.). These "prism experiments" it is suggested (J. H. J.) deserve a little consideration, as being the first step towards, and as being suggestive of, a better method of investigation. There is another way in which the prism may be used for the present research; but the statements about it are only given because they are a second step towards a better investigation.

We may ask what will happen to a patient in the "prism paralysis" of his right external rectus whilst he is looking to his right, for whom there is, in effect, no left internal rectus as when that muscle is paralysed as part of a left third nerve paralysis? Or the case of a man who has lost his left eye could be taken to test the "out-going *v.* in-going theories." In either of the two cases (loss of the left eye or paralysis of the muscles supplied by the left third nerve) let paralysis of the right external rectus be imitated, or rather (*vide supra*) partially imitated, by placing a prism over the intact right eye. Might we infer anything, from the presence or absence of "erroneous projection," when the patient tries to look to the right, whether or not abnormally great contraction of the left internal rectus is or is not necessary for the production of the "erroneous projection" which occurs in a case of "veritable paralysis" of the right external rectus? But we have again to note that in the two kinds of cases remarked on in this paragraph there will be strong in-going, periphero-central, currents from the strained action of the *right* external rectus during its "trying" to overcome the prism, to the over-action of this muscle the erroneous projection might be attributed. This suggestion is the second step in the inquiry. Now for the third step.[9]

One of us (L. P.) suggested that the proper case for the present research would be that of a patient in whom not only are the muscles supplied by the left third nerve paralysed, but in whom the right external rectus muscle is paralysed too. Such a case has lately been met with. The patient is in the National Hospital, under the care of our colleague, Dr. F. E. Batten, whom we have to thank for permission to publish particulars of the case. We have also to thank Dr. H. P. Gibb for an important part of the notes.

[4] Risien Russell refers in the first of the two of his papers we have mentioned to what we may call "the ocular part" of Sherrington's widely applying researches.

[5] See Proceedings of the Royal Society of Medicine, June, 1908.

[6] Helmholtz, Handbuch der Physiologischen Optik, Second German Edition, p. 752, wrote as translated in the following: "Not only does the position of the seeing eye but also the position of the closed eye influence our determination of the direction in which the object looked at lies. If the opened eye remains stationary while the closed eye looks either to the right or to the left the object looked at by the open eye also has an apparent movement to the right or the left."

[7] Zur Grundlegung der Psychophysik, 1878.

[8] Principles of Psychology, vol. ii., p. 506 et seq.

[9] What I call the third step is by far the most important one; it is founded on Mr. Paton's suggestion. This part of the research (see Part V.) was made by him. (J. H. J.)

Mr. Paton has examined the ocular condition of the patient and gives an account of his examinations in Part V.

(The remainder of this article (Parts II., III., IV., V., and VI.) is written by Mr. Paton.)

PART II.—*An Account of some Experiments in Partially "Imitating" the Effects of Paralysis of an External Rectus in Normal Subjects by Means of a Prism.*

In these experiments I (L. P.) have throughout used a 12° prism and have assumed the refractive index as approximately 1·5. The distance of the eye from the object in each case has been about 18″; with the prism of 12° placed accurately in front of one eye the displacement of image produced at this distance should be theoretically slightly under 2″.[10] The difficulty first met with was that as soon as the finger with which the man who was being experimented on was asked to point at the object, came within his field of vision, it also was subject to the same displacement as the object and was guided in (or out) towards the object. This difficulty was overcome by using an ordinary writing pad held under the man's chin. At the far end of the pad a cross was drawn on the paper close to the edge, and on either side inch spaces were marked out. The man experimented on was then asked to bring a pencil or a penholder along the under surface of the pad and to place its point exactly opposite the cross. In this way he was unable to see the movement of his hand and was not conscious of any error in his power of projecting until he saw the point of the penholder appearing at the far edge of the blotting pad and some distance to the right or left of the marked cross.

I tried this experiment on a series of normal individuals, most of them medical students at St. Mary's Hospital or clinical assistants at the Royal London Ophthalmic Hospital. In the majority of these men the projection with each eye separately without a prism was very accurate; the pen's point was placed exactly at the cross. In a few, however, there was a tendency to project a little to one or other side of the cross when one eye was covered and the men who had this deficiency in power of projection mostly showed a slight heterophoria (usually exophoria).

Testing the whole series of healthy men experimented on with a 12° prism I found that in every one there was a displacement of the image of from 1½″ to 2″. In the case of the man who had slight false projection to start with (this was never more than half an inch) the displacement was always 1½″ to 2″ from the point of false projection.

To resume: the image in all these normal persons was erroneously projected in the direction in which the eye with the prism in front of it was looking, and on uncovering the other eye that eye was always found to be looking towards the point to which the image had been falsely projected, that is to say, there was apparent "secondary deviation" of that eye.

PART III.—*Cases of Paralysis or Paresis of the Third Nerve Muscles of One Eye in which the Prism Experiment was Tried.*

CASE 1.—Patient 54 years of age (Moorfields). Paresis of muscles supplied by the left third nerve and right-sided facial weakness. *Left Eye: Cataract.* The left pupil was dilated and was inactive to light and during attempts at accommodation. The upward, downward and inward movements of this eye were almost absent. Outward movement was good. *Right Eye:* V. = $\frac{6}{12}$ c. + 1 D. Sp. = $\frac{6}{6}$.[11] With the right eye uncovered the patient's projection was accurate. He brought the pointer up exactly opposite the cross each time. On putting a 12° prism, base inwards, in front of the right eye, he projected the cross when it was at 18″ distance from his eye invariably 2″ too much to the right. On trying him with the same prism base outwards he projected the mark 1½″ to the left of its true position.

CASE 2.—Patient, 42 years of age (Moorfields). Paralysis of left internal rectus, slight paresis of right internal rectus and of the right superior rectus, occasional ptosis. In this case on testing the projection of the paralysed left eye, the amount of false projection was found to be about 7″ to the right of the object aimed at. The left eye was then covered and a 12° prism, base inwards, was placed in front of the right eye. The cross was then projected about 2″ to the right of its true position.

CASE 3.[12]—Complete third-nerve paralysis right eye. The right eye can move inwards past the middle line to the extent of less than 10°. It possesses almost full outward movement. Upward movement practically non-existent. Downward movement very limited and accompanied by marked rotation. The movements of the left eye are good in all directions. On asking the patient to aim with the pen at a cross drawn on the blotting pad 18″ away from the right eye with the left eye covered, he always gets fairly good projection, the tendency being to project occasionally a little to the left but never more than 1″. When the right eye (the paralysed eye) is covered and he is asked to bring the pointer up opposite the cross with the uncovered left eye, he brings it up at distances varying from half an inch to an inch and a half to the right of the cross. When a prism 11°, base inwards, is placed in front of the left eye, he then projects the cross sometimes absolutely correctly, sometimes about half an inch to the left. Most frequently his projection is correct. When the prism is placed base outwards the projection of the image varies between 2″ and 3″ to the right of the mark.

CASE 4.—(National Hospital for the Paralysed and Epileptic.) This case was shown to me as a case of paralysis of the right third nerve. On testing the supposed sound eye, the left eye, it was found that the patient projected objects about 2″ too much to the right and consequently putting a 12° prism, base inwards, in front of the left eye he got accurate projection, pointing to the probable existence of paresis of left internal rectus as well as to right third nerve paralysis. This case, of course, differs from the others mentioned, but is worthy of note in that the change in the projection produced by the 12° prism was the same as in the other cases.

CASE 5.—Patient aged 57 years. Complete paralysis of right third and fourth nerves. First saw double four years ago. Ptosis developed last September. Action of orbiculares palpebrarum good. Left eye weak as a child. Hypermetropic in both eyes. Vision with correcting glasses good in each eye. On testing this patient's power of projection with her left eye it was found to be accurate. On placing a prism of 12°, base inwards, before her left eye she misplaced the cross 2″ to the left of its true position.

CASE 6.—Right eye removed and contents of orbit eviscerated for endothelioma of the orbit. On testing patient's normal power of projection with her left eye it was found to be fairly accurate, the variation being under half an inch on either side of the mark. With a 12° prism, base in, before her left eye, she misplaced the cross 2″ to the left. With the prism outwards she misplaced the cross 2″ to the right.

I have examined many other such cases on the lines suggested by Dr. Jackson with similar results in them all. I have also measured in many of these cases the error of projection in the affected eye with the head held in various positions, and I have compared the angle of deviation in projection with the angle of secondary deviation of the unaffected eye. I have found that these practically never correspond, the secondary deviation of the unaffected covered eye being, as a rule, much greater than the angle of false projection.

PART IV.—*Remarks by L. P. on the Results of Experiments with Prisms.*

In these cases of paralysis or paresis of the muscles supplied by one third nerve, the other, the normal eye, being covered by the prism, base inwards, the patient when told to look at an object on the side of the eye which is covered with a prism must turn the eye out slightly in order to get the image of that object on to the macula; therefore the projection of the object might be supposed to be due to the impulses sent up from the external eye muscles indicating the true position of the globe. The false projection might, in fact, be said to be due in this case to afferent impulses as the projection takes place exactly in the direction in which the eye is turned by the action of the external muscles. I incline to think that these experiments, so far as I have been

[10] It was found in a large number of observations on normal people that this amount of displacement was very regular.

[11] The right eye was slightly long-sighted but with the proper glass his vision was normal.

[12] The ocular paralysis in this case was of considerable standing and the history of the case renders it probable that the left eye had been affected by some ocular palsy as well as the right eye, though to a much less degree.

able to try, only indicate that the false projection induced by a prism on the right eye, in cases of third nerve paralysis of the left eye, can be explained by the change in the position of the right eye, brought about in order to get the image focussed on the macula. This change in the position of the eye will be brought about by alterations in the relative contraction of the various muscles of that eye capable of developing afferent impulses. These experiments cannot therefore be regarded as an aid to the solution of the problem of "out-going *versus* ingoing currents." Stating this in another way, I may say as an axiom that a man possesses accurate power of projecting when he projects an object in the line of the axis of the pencil of incident rays entering his eye. If by some means external to his eye these rays are deflected before they reach his eye and after leaving the object, we should regard him as possessing normal power of projection only when he projects the object in the direction of the axis of the rays after deflection and as they reach the eye. That is to say, he ought to project the objects a definite distance to the right or the left of its position, the distance varying with the prism employed, and if he does so his power of projection may be said to be true, since in this case the falsity is introduced by something external to himself. In the case of paralysis of an external rectus the falsity is introduced by a defect in the ocular mechanism, central or peripheral, of the man himself. In other words, I would not regard these prism experiments as proving anything in regard to false projection and its origin in cases of paralysis of eye muscles, except in so far as they render doubtful the part that the covered eye plays in determining the line of false projection.[13]

PART V.—*Examination of a Case of Complete Paralysis of Left Third Nerve with Paresis of the Right Third and Paralysis of the Right Sixth Nerves.* (*General Notes by Dr. H. P. Gibb, House Physician, National Hospital for the Paralysed and Epileptic.*)

Patient, aged 36 years. Case of polioencephalitis superior (Wernicke) under the care of Dr. Batten,[14] was admitted for ocular paralysis of sudden onset affecting both eyes. Family history is unimportant and he himself has always had good health. He denies having had venereal disease, says he is moderate in the use of alcohol and shows no symptoms of lead poisoning. Two months before admission, while in his usual health, he felt his left eye to be closing. In half an hour the eye had closed completely. He worked all that day, and has done so regularly since and has had no trouble beyond this closing of the eye. No diplopia at the time and only on one occasion since—about a week after onset—when walking downstairs he looked downwards and saw two steps where there was only one and slipped. He has never noticed any other peculiarity about either eye. When the condition came on he had no discomfort; no headache, no sickness; felt in normal health, but since then he has had frequent headache coming on chiefly in the early morning and towards night. He has never vomited. No weakness in limbs at onset or since. No paræsthesiæ in limbs. No difficulty in speaking or swallowing. No symptoms suggesting tabes. No lightning pains: no bladder troubles: no unsteadiness in gait. The patient is a well-nourished, healthy looking man. His memory, attention and cerebration are all good. Heart normal. Pulse tension not varied; blood pressure 120 mm. of mercury. No thickening of vessels obvious to palpation; no changes in retinal vessels pointing to arterial degeneration. Urine contains no albumin or sugar. With the exception of II., III., IV. and VI. the cranial nerves are normal. The motor system of neck, arms, trunk and lower extremities presents no abnormality. There are no sensory changes. Supinator, triceps, and biceps jerk are very active and equal on the two sides. The abdominal reflexes are present and equal. The kneejerks and ankle jerks are equal on the two sides. There is no ankle clonus. The plantar responses are flexor.

[13] See previous quotation from Helmholtz.

[14] The following note about this case is supplied by Dr. Batten. "This is a case of polioencephalitis superior hæmorrhagica (a condition originally described by Wernicke) due to a vascular lesion usually occurring in alcoholic subjects. The autopsies in such cases have shown numerous punctiform hæmorrhages confined to grey matter in the floor of the third and fourth ventricles and in the aqueduct of Sylvius. Such a lesion results in damage to the oculo-motor nuclei or to the inter-medullary portion of the oculo-motor nerves. Reference:—Wilbrand and Saenger. Die Neurologie des Auges, vol. i., S. 264."

Report of Examinations of the Eyes by L. P.

The patient was admitted for ocular paralyses of sudden onset affecting both eyes, the left more than the right. The vision of the right eye without correcting glasses equalled $\frac{6}{12}$ Snellen (half normal), in the left eye $\frac{6}{18}$ Snellen (one-third normal). There was no limitation of the fields of vision to rough testing though both optic discs were pale, the left more than the right.

Ocular movements.—Right eye: The right eye shows no drooping of the upper lid, though there seems to be an occasional slight tendency for the lid to fall a little. This, however, is only momentary. The upward movement of the right eye is moderately good, the downward movement is only fair, inward movement is quite distinct, though reduced to about one-quarter of the normal, outward movement very limited. The right pupil reacts fairly well to light and on convergence, so that in the right eye there is paralysis of the sixth nerve with paresis of the third nerve. *Left eye:* The left eye has complete drooping of the upper lid (ptosis). In rest position the eye is widely turned outwards, showing only two to three millimetres of sclerotic at the outer canthus. There is no power of upward movement. On attempting to look down there is very marked rotation of the eye (action of the superior oblique in position of extreme outward deviation). On attempting to look inwards the eye does not pass the middle line. Outward movement is good. The left pupil is immobile in a position of semi-dilatation. The left eye then shows complete paralysis of the third nerve with the fourth and sixth unaffected. There is no weakness of the orbicularis palpebrarum on either side.

In testing the patient's ability to project accurately a blotting pad, 18 inches long, was used in the manner already described. The drooping of the left upper eyelid prevented him using that eye at all while we were testing the projection of his right eye. I first asked him to aim steadily at the cross whilst his head was in the middle line and in such a position that there was no attempt to use either his external or internal rectus muscle, i.e., right eye in primary rest position. In this position he managed to point with fair accuracy to the cross. His head was now turned to the left to such an extent that by using all the power of abducting he possessed he could still fix the cross. Under these conditions he pointed four inches to the right of the cross, i.e., a false projection of four inches at a distance of 18 inches. On now turning his head to the right in the same way, so as to bring into play the full power of his paretic adductor muscles, the pointer was brought up to a spot about four inches to the left of the cross. In other words he in both cases projected too far in the direction of the paretic muscle he was trying to use. His left eye remained during these attempts of course in a position of deviation varying a little as his head was turned to the right or to the left, but in no case was its visual axis directed anywhere near the place where the pointer appeared. We now covered his right eye and held his left eye open and asked him again to aim at the cross. When his head was held in the middle line it was a great effort for him to get the left eye fixed on the cross at all, and he pointed between eight and ten inches to the right, i.e., an error in projection of nearly 30°. On allowing him to turn his head to the extreme right so that he could look at the object aimed at with practically no feeling of effort at all (position of extreme relaxation of paralysed muscle), he managed to point with fair accuracy. On now examining the position of the right eye it was found to be only slightly deviated in from the middle line. The result of the examination of this case seems to me to be definitely opposed to the hypothesis that the false projection in the case of an eye where one of the muscles is paralysed may be due to impulses coming up from the muscles of the sound eye.

In this case afferent impulses from the muscles of the left, the covered, eye can have no influence on projection whilst the right eye is being used since the left eye is always in a position of left deviation. With the right eye in the primary position the projection was accurate, but as soon as either of the paretic muscles, the right external rectus or the right internal rectus, was called into action, the patient got false projection (in the direction of action of the respective muscles). This false projection was not due to false position of the eye since the image of the object looked at was still formed on the macula in the positions in which

the head was held. The movement of the patient's hand was not coördinate with the amount of movement which had actually taken place in the eye, but with the amount that the patient had willed to take place. A certain impulse had started out from the cortical oculo-motor centres. It had been partially blocked on its way to the eye muscles but had produced its full coördinating effect on the motor centre for hand and arm movement. It may, however, be suggested that accompanying the blockage of impulses on their way down to the muscle there may be some disorder of the returning impulses from muscle to the brain cortex. But a moment's consideration will show that this, if it does occur, as is possible, would probably be in the nature of a further blockage and that the brain would in that case register a less contraction than had actually occurred, and the resulting false projection, instead of being in the direction of action of the paralysed muscle, would be in the reversed direction.

PART VI.—*The Results of Forced Displacements of the Eye: the Nature of the Erroneous Projection in Such Cases and the Nature of the Vertigo.*

The patient whose case has been discussed in the preceding section had at no time any vertigo. Even with his head held in a forced position there was no staggering in his gait nor feeling of giddiness. At Dr. Jackson's suggestion I have tried on myself and on other normal individuals the effect of forced displacements of the eye in producing erroneous projection and a feeling of vertigo. If a finger is pressed into the outer corner of the right eye, a crossed diplopia can be produced[15] and with a little care the downward displacement can be eliminated and one can obtain a simple horizontal displacement of objects, as seen by the right eye, to the left. The eye, in these circumstances, has been rotated outwards and a paralysis of the right internal rectus is simulated. The range of false projection that can be produced in this way varied from two to five inches. It is much more difficult to produce an internal rotation by pressure on the inner part of the eye. Usually a large phosphene appears and vision is interfered with before any marked displacement of objects takes place, but a slight amount of rotation can be produced with seeming displacement of objects (to the right in the case of the right eye, i.e., simulation of paresis of right external rectus). When I produce the first of these displacements on my own right eye, it causes no sensation of vertigo while I have both eyes open. As soon as I cover my left eye a feeling of giddiness comes on[16] and on walking the gait is of a staggering nature, with distinct tendency to fall to the right. The vertigo may last for some time after stopping the experiment. I am unable to produce for a sufficiently long time the effect of pressure on the inner side of the right eye, so that I cannot say definitely whether the tendency in that displacement is to fall to the left. Pressure on the outer side of the left eye produces a staggering to the left side. Only one of the normal individuals whom I have asked to try this experiment had any feeling of giddiness while the untouched eye was uncovered. In the others the vertigo developed only on covering the eye which was not the subject of experiment. And in every one the tendency was to fall away from the side towards which the objects were displaced.

SOME POINTS IN THE TREATMENT OF NERVOUS DISEASES.[1]

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IN order that we may, in so-called nervous disease, adopt the measures best calculated to promote amelioration or cure it is essential to recognise the true nature of such disease. In many diseases which are called nervous the disease is not primarily in the nervous system itself. The functions of that system may be interfered with, because the nutrition of nervous elements is impaired in consequence of the derangement of some other tissue or organ. Thus, in the condition which we know as hemiplegia, in which one half of the body is paralysed, this paralysis is the result not of any inherent primary defect in the nervous system itself but of an interference with the nutrition of a part of the nervous system due to an interruption of its vascular supply. In other words, hemiplegia really depends upon a diseased or defective condition of the vascular system, leading to impaired function of the nervous system. This impairment may be of varying degree, and according to the degree and extent of impairment so is the character—severe or slight, restricted or widespread—of the paralysis.

The Causes and Treatment of Hemiplegia.

This leads us to consider the different causes of ordinary hemiplegia and the means to be adopted in its treatment. Hemiplegia may be the result of (1) rupture of a blood-vessel, resulting in a cutting off of the blood supply of a part of the nervous system and consequent impairment of the function of that part; there may also be a tearing up of nerve fibres and pressure on neighbouring parts, the result of the blood clot; and there may also be some degree of inflammatory change in the vicinity of the blood clot. But these changes, as will be seen at once, are really the result of vascular disease, and it is to the condition of the vascular system that one's thoughts must be directed if treatment is to be efficacious. When hemiplegia is the result of a ruptured vessel examination will usually lead to the recognition of a high blood pressure, with perhaps considerable cardiac hypertrophy, and it may be found that it is associated with albuminuria, the result of cirrhosis of the kidney. In such a condition consciousness is usually abolished, the breathing is stertorous, and the temperature raised. The unconsciousness may be profound—a condition of actual coma—and the respiration may be of the Cheyne-Stokes variety. In other cases the constitutional symptoms may be slight, but in any case they may last for weeks. But hemiplegia may be the result (2) of thrombosis in a blood-vessel, leading to abolition of the function of the part of the brain supplied by this vessel. Here, again, the symptoms of nervous disturbance are secondary to a diseased condition of the vessel, with possibly a morbid state of the blood—a state in which it is liable to clot, while a roughened and diseased blood-vessel furnishes it, so to speak, with a good excuse for clotting. In such a case we have the function of a part of the brain involved dealt with in a much more gentle way and the constitutional effects are in consequence much less sthenic. In an aged person the attack of paralysis from thrombosis usually occurs during rest—very frequently in the night, and although the hemiplegic condition is unmistakeable the constitutional condition may be one in which little or no disturbance is obvious—there may be no rise of temperature, no evidence of profound alteration, the pulse may remain slow and quiet and regular, and consciousness may, and usually does, remain quite unimpaired. But such a condition may arise in a young person in whom the vascular condition cannot be supposed to be the result of senile changes and in whom there is no evidence of visceral disease. The thickening of the vessel wall in such a case is the result of syphilitic endarteritis, and the symptoms at the onset in such a patient are similar in every way to those accompanying the onset of hemiplegia in a patient with senile atheroma. There may even be no headache, for as a rule the syphilitic cases with headache are those in which there is a presumption that syphilitic meningitis is present. Yet it must not be forgotten that in such cases vascular disease may also be present so that the presence of headache in any case of hemiplegia is not incompatible with the likelihood of this being due to blocking or thrombosis in an artery the seat of syphilitic endarteritis. It may be stated generally that hemiplegia occurring in a person under 40 years of age, in whom there is no evidence of cardiac hypertrophy or cardiac disease or kidney change, is to be presumed, for purposes of treatment, to be the result of syphilis.

But yet another variety of hemiplegia (3) should be mentioned—that, namely, in which the onset is quite sudden and may be attended or not with loss of consciousness. When consciousness is lost in the class under consideration—the class, namely, in which heart disease or aneurysm is recognised to be present and in which the lesion is

[15] Pressure at the outer canthus can also produce a homonymous diplopia. Personally I find it easier to produce crossed diplopia.

[16] On this point see von Graefe, "Des Paralysies des Muscles de l'Oeil," p. 11, French edition, 1870.

[1] A paper read before the Streatham Branch of the British Medical Association on Jan. 28th, 1909.

probably a blocking of a vessel from embolism—then the presumption is that the vessel blocked is a large one: in other words, that the embolus is probably one of some size, or at least that it has been lodged at some point at which it cuts off the blood-supply of a considerable brain area. The suddenness of the cutting off combined with the size of the vessel blocked determines the condition of consciousness. In such a case there is frequently a history of rheumatism, or chorea, or scarlet fever at some former time, and there may be a weak irregular pulse and in the heart evidence of dilatation as well as of valvular disease.

In all these conditions, then, we have a similar clinical picture—one of paralysis of one side of the body with or without disturbance of consciousness and with evidence of visceral disease or a weak circulation with diseased vessels. Yet in each of them the treatment must differ profoundly if we are to give the patient the best chance of recovery, and on this account the diagnosis is of the first importance. If we are satisfied from various considerations that hæmorrhage has taken place we should adopt at once measures to keep the patient absolutely at rest while we are relieving the condition by adopting measures to reduce blood pressure. In such a condition bleeding is most beneficial, but, as you know, it is an exceedingly difficult measure to carry out in private practice. Failing this, fluid must be withdrawn through the bowel, by calomel and a saline, in order that we may lower tension, and drugs calculated to lower tension—e.g., phenazone or even trinitrin—may be called for. In a case of thrombosis, however, the treatment must be very different. Means must be taken to stimulate the circulation, strychnine must be used, even alcohol may be administered, and purging, at first at least, must be carefully avoided. In the cases of syphilitic thrombosis, while similar measures must be adopted it is well to have recourse at once to the inunction of mercury. Iodide of potassium should be avoided at first because of the manner in which it tends to lower tension and even to favour clotting. And in the cases of embolic hemiplegia the treatment of the condition really resolves itself into treatment of the cardiac condition which has made the occurrence of embolism possible.

One or two points should be mentioned in reference to the effect to be expected from treatment in these conditions in hæmorrhagic hemiplegia. If we are successful in preventing a renewal of the hæmorrhage and in preventing inflammation around the blood clot, a certain degree of improvement is to be expected. Complete recovery is hardly to be looked for and the patient will probably remain hemiplegic—sometimes the arm suffering more, sometimes the leg, according to the position of the hæmorrhage, and sometimes also, especially in right hemiplegia, speech being impaired. And, of course, in spite of our measures for lowering tension, given a hypertrophied heart and brittle blood-vessels, a recurrence of hæmorrhage sooner or later is only too certain. With reference to thrombosis the tendency in senile cases towards improvement is not strong. There may be some improvement; there may be little, and where any vessel is blocked there is a likelihood that a dilatation of the vessel may take place on the proximal side of the thrombus and so a condition may be established in which this dilatation may give way and hæmorrhage of a fatal character take place. On the other hand, things may remain unaltered for a considerable time, and if the heart continues to become enfeebled another thrombus may occur and this may be repeated several times. In the syphilitic cases, however, although antisyphilitic remedies cannot probably render a blocked artery again pervious, yet if they are used energetically and periodically it may be possible to remove the disease of other vessels and so prevent the occurrence of subsequent thrombosis. And in many cases of so-called syphilitic hemiplegia, although the paralysis may remain with little or no improvement, the patient may remain during many years without any fresh attack.

In embolic cases great improvement is the rule, especially in young people. In such, of course, we are dealing with healthy vessels, and those around the area of which the blood-supply is cut off will in some degree take on the function of the vessels thrown out of action. And if we can get the heart into a good state and keep it so we may obviate the danger of subsequent attacks. So that in cases of embolic hemiplegia also we may have a patient remaining indefinitely in a condition, no doubt of partial paralysis, yet without much danger of a recurrence of the hemiplegia.

Disseminated Sclerosis.

There is a disease of which I should like to say a few words—a disease of which I cannot help thinking we see many more examples than we did a few years ago—I mean disseminated sclerosis. I think there is little doubt that we are inclined to diagnose this disease a little too freely. It has become the "dumping ground," so to speak, of various cases not all of which are of the classical type. Yet after making all allowance for such cases, and having regard only to the cases in which the diagnosis is verified by post-mortem examination, I am convinced that it is much more common than it was even 20 years ago. Its nature is not understood. It is probably the result of a poison, but why it should distribute itself in the way it does we do not know.

But one thing seems obvious, and that is that the poison is liberated in a curious paroxysmal way, or that the nervous system becomes sensitive to the poison periodically. It seems to exert an effect immediately—an effect which soon passes off partially—and the patient improves and remains better for an uncertain time. Then another release of poison takes place, the patient is much worse than before, but again improves, although not reaching quite the same level of health as before, and so on repeatedly. Yet it must be remembered that occasionally the first dose, given favourable conditions, is not repeated and the patient for all practical purposes recovers completely and remains well, it may be for years. I have a patient now, a young woman, who three years ago had all the symptoms characteristic of disseminated sclerosis: unsteady spastic walk, nystagmus, articulatory peculiarity, exaggerated knee-jerk, ankle clonus, and extensor plantar response. She is now apparently well, can walk, and has regained control of all her organic reflexes and has recently had a baby. The only sign of disease she has is an extensor plantar response (Babinski's sign) in each foot—a sign of some definite damage to the pyramidal system—but I am hopeful that there will be no further development in this case. In many cases of this disease one of the marked features in the history is an account of complete but temporary loss of vision in one eye. If such a case is seen at the time of this trouble it is found that no morbid appearance can be detected in the disc or fundus by means of the ophthalmoscope. The vision gradually improves and may become perfect. Yet it may be found that the discs become pale or that one does, the vision remaining perfect. And so also a limb may be paralysed temporarily and recover; and these are conditions which, I believe, were formerly regarded as examples of so-called hysterical amblyopia and functional paralysis respectively. We now know that they are probably the result of patches of inflammation occurring in the optic nerve and in the motor tracts respectively—patches which are sufficiently severe to interfere materially with the function of the parts in which they occur, yet only temporary in their effect.

So we are justified in regarding disseminated sclerosis as a disease in which improvement may take place and in which therapeutic measures may at least be helpful. The best treatment for such a condition, as soon as it is recognised, is to put the patient completely at rest. Our routine treatment in hospital is to put the patient to bed, to keep him or her there for at least three weeks, to give massage regularly, and to combine this with some stimulating electrical treatment and the administration of abundant but simple and easily assimilated food. In many apparently very advanced and even helpless cases the result of this treatment is most striking. A patient unable to walk before may even after a short time regain this power and may improve in every other way. In some the improvement may be so striking as almost to justify us in calling it a cure, and in a few at least this improved condition endures for years.

The Types of Tabes.

So also in tabes, formerly regarded as a disease necessarily and inevitably progressive. It is surprising to one who sees many cases of tabes to recognise how frequently is seen a gradual and steady improvement. Tabes is a disease of many types. Several distinct types may be enumerated, but it is not pretended that in giving this enumeration one is giving an exhaustive classification.

1. The ordinary type, so-called, to which the common name "locomotor ataxia" is probably applicable, a patient with difficulty in walking, especially in the dark, lightning pains, girdle sensation, and occasional difficulty with the

sphincters; with these subjective sensations there are usually associated some clinical signs—e.g., absence of knee-jerk, Argyll Robertson pupils, and occasionally delay in the perception, especially of thermal and painful stimuli from the feet and from the ulnar distribution. This is one type.

2. A second type is that in which the patient seeks advice on account of irregularly periodic attacks of severe vomiting. Such a patient usually has the belief that these are bilious attacks, but on examining him it is usually found that he has Argyll Robertson pupils, absent knee-jerk, and the occasional occurrence of pains. Very often there is no ataxy in such a case, but the symptoms and signs enumerated clearly indicate that the case is one of tabes with gastric crisis.

3. A third group is that in which the patient seeks advice on account of failing vision. He makes no complaint of difficulty or weakness in walking. As a rule he experiences none. He is steady with his eyes closed. He not infrequently confesses to severe pains in his legs, which he designates rheumatic pains, and he may have a little difficulty in regulating the action of the sphincters of his bladder. On examination he is found to have Argyll Robertson pupils and also to have primary atrophy of the optic nerve.

In reference to the last class of cases it is to be feared that treatment cannot claim any great efficacy in arresting the disease. In the great majority of the cases the optic atrophy goes on to complete blindness, although occasionally a case is met with in which the atrophy seems to become arrested when only slight damage has been done, more frequently, I regret to say, when useful vision is no longer present. I have sometimes thought that strychnine, especially given hypodermically, has a good influence on the optic nerves in such cases. But I cannot speak with confidence and there is no time at which I feel so discouraged and so helpless as when I am confronted with a case of tabes with early optic atrophy. So many of these patients lose vision in a few months' time and become to all intents and purposes completely blind.

In the second class of cases—that in which gastric crises are the obtrusive symptoms—the progress is curious. As in the class last referred to, ataxy is unusual, and as a rule the crises cease after a few years, yet the patient is not infrequently left a physical wreck, not so much by the disease as by the treatment by morphine which is usually found to be the only means of controlling the sickness. Not infrequently trophic symptoms develop in those cases—perforating ulcers or joint changes—but occasionally one is gratified by witnessing not only the cessation of the crises but an arrest also in the progress of the disease, and a return of the patient, not, indeed, to "rude health," but to comparative comfort and the capacity for a fair amount of physical and mental activity.

It is, however, in the first class of cases that treatment is really efficacious—those cases, namely, in which ataxy is the chief and most troublesome symptom. The lightning pains in such cases are usually controllable by aspirin, phenazone, or migranine; the bladder difficulties are certainly helped by the drugs of which belladonna is the type. The ataxy, however—the difficulty in getting about—is the most troublesome symptom. But since the introduction by Dr. Fraenkel of the exercises with which his name is very properly associated—exercises simple in themselves but skilfully devised to develop muscular tone and coördination—the treatment of this ataxy has been a much more hopeful task. I have seen the suspension treatment tried and I have seen it fail; I have seen Brown-Séquard's orchitic fluid tried and I have seen it fail; but exercises such as those I indicate to you I have seen so successful in improving, and even restoring, the power of walking that I consider that their adoption constitutes a great therapeutic advance. I have known a patient carried into hospital so ataxic that he could not walk even with help, and I have seen that patient walk out of the hospital after two months' treatment carrying only a small stick, and that more for ornament than for use. I know a man who ten years ago lay helpless who is now able to get about with such a degree of ataxy as is only apparent to the skilled observer. And I could tell of many similar cases. At first such patients are put to bed and have exercises with such apparatus as I show you. Then when they are improving they are allowed out of bed and they are practised with other apparatus. There is nothing peculiar about the exercises. You will see that they are merely adopted for the improvement of tone and coördination, the two striking features about the cases being muscular hypotonia and incoördination. It is often useful to combine massage with the exercises and rest, and at first, at least, the absolute rest in bed, absolute except for the exercises carried out there, is essential.

Paralysis Agitans.

Paralysis agitans is one of the most distressing diseases of degenerative type with which we have to deal. The most troublesome symptom is the shaking, but besides this the patient frequently complains of the feeling of constant heat, of free and troublesome perspirations, and not infrequently of sleeplessness. It is idle to hope that we shall ever be able to cure such a disease. But it would be something to be able to relieve some of the troublesome symptoms, and I have been struck with the efficacy of hyoscine in modifying, I might almost say, in some cases, in controlling the tremors. I usually give the hydrobromide and I give it with a small dose of strychnine in an acid mixture. The dose I usually begin with is 1-200th of a grain three times a day, but this can sometimes be increased up even to 1-100th, but sometimes is efficacious even if only given as 1-200th twice daily. The drawback to its use in this and in other diseases with tremor is the excessive dryness of the throat which it produces, and it also in some people very readily apparently produces paralysis of accommodation and pupil dilatation, so that these two inconveniences have to be borne in mind as it is often necessary to reassure the patient who complains of them. Of course, one meets with certain cases—perhaps it is that in these the disease has reached a certain stage—in which no benefit is experienced from the drug. Yet in many cases, as I have said, it is useful in controlling and at least in modifying the severity of the tremor.

Infantile Paralysis.

Another most tragic disease which neurologists have to deal with is infantile paralysis or, to use its pathological designation, acute anterior poliomyelitis, and it is a condition in which it is essential to inquire, "Can we do anything for it by treatment?" The condition, as you are aware, is frequently ushered in with feverishness and malaise. Occasionally there is severe pain in the limbs and sometimes there are head retraction and even unconsciousness. Sometimes the constitutional condition is less severe, and frequently the true nature of the illness is not recognised until the feverishness has subsided and the child attempts movements. In the early stage its symptoms are easily mistaken for those of acute rheumatism, of pneumonia, or of meningitis, and treatment appropriate for those maladies may have been adopted. Is there any treatment for the condition itself in its acute stage which can be regarded as efficacious? Personally I am not aware of any. Belladonna and other drugs have been credited with good effects, but I fear that in the present state of our knowledge only general measures suited to combat a grave feverish condition, probably toxic in character, are to be relied upon. Such are maintenance of warmth, the use of warm liquids internally, and the administration of such drugs as salicylate of soda or quinine. And one point has to be kept in mind in drawing conclusions as to the efficacy of treatment—namely, that in some cases almost certainly of the nature of infantile paralysis spontaneous cure occasionally results. I am inclined to think that recently—within the last year—such an experience has been not infrequent with those who see cases of this character, and I should be interested to know whether any of you here to-day have had any experience of such a kind. One I may mention is that of a little child whom I saw at hospital with definite paralysis of the left leg following the constitutional disturbance which we see in this disease. In this case, now, after a few weeks, apparently complete recovery has taken place. I saw some years ago another case in which the right arm was affected. In this, also, complete recovery took place, even the deltoid, so often in these cases permanently weakened, appearing to recover completely. But probably the most striking instance was in the case of two boys living in the same house and affected within a few days of each other with symptoms suggesting a grave cerebro-spinal illness—sickness, malaise, high temperature, head retraction, and paralysis. One of these boys completely recovered; the other now, after some months, still has a grave disability of his left thigh and leg with loss of knee-jerk on that side, and I fear one cannot hope for more than modified recovery in his case.

After the acute stage has passed much may be done to

favour improvement and to prevent deformities. Movement should be begun at once, even when tenderness still remains in the muscles, for it is surprising how quickly deformities from contracture may develop, and when once contracture has taken place it is painful and difficult in a child to overcome it. Massage also, exceedingly gentle while tenderness remains, must be assiduously persisted with for months. As a general rule, improvement takes place for a year, and I have known it continue for even longer. The use of the constant current also is clearly indicated, for we are dealing with muscles which do not respond to voluntary impulses and which do not contract to a faradic current, yet by stimulating them with the constant (or galvanic) current we are using the only means of causing contraction and so supplying them with the stimulus to growth and improved nutrition which only contraction can supply. In young children this treatment is often exceedingly difficult, because it is necessary to give some pain, and children are apt to be frightened. So that at first it is best to use the electrode without any current passing until the child is reassured, and to follow this with an exceedingly mild current gradually increased until one of sufficient strength can be applied. In some cases, however, such is the distress produced, it is quite impossible to use the current without probably doing more harm than good; and when all has been done and the condition has become stationary it is often not only desirable but necessary to supply the child with some mechanical support so that easy locomotion may be possible.

The Treatment of Epilepsy.

I wish now to say a few words with reference to the treatment of epilepsy. I am convinced that much can be done in this disease if regard is had to patient persistence in treatment on certain definite lines. I think it is better to regard treatment in epilepsy as directed rather towards the prevention of the occurrence of convulsions than to the cure of the disease. In many cases the attacks occur at any time in the 24 hours, and occur at intervals, sometimes short, sometimes long. The latter class of cases is more difficult to treat because patients after the lapse of more than the usual interval are apt to regard the condition as cured and then they cease to take medicine. It is best to impress epileptics with the fact that until they have gone for at least a year without any manifestation of the disease the treatment must be continued. Even then it must be only interrupted or discontinued under advice, and in most cases it is well to continue treatment for a much longer time. In many cases the attacks are only nocturnal, or at least are said to be nocturnal. Yet in many such cases it will be found, on inquiring closely, that a patient subject to so-called nocturnal fits has occasionally had an attack during the day, but that as a rule such an attack has occurred at a time when the patient was asleep. So that in many such cases the attacks are to be regarded rather as attacks occurring during sleep than as attacks occurring during the night. Such attacks are, as a rule, very amenable to treatment and to treatment which has regard to the occurrence of the attacks during sleep—i.e., under conditions in which the circulation of the brain is much modified.

In another class of cases the attacks occur in the morning while the patient is dressing, and these attacks also are to be successfully treated by having regard to the time of the occurrence of fits and the administration of drugs at such a time as to have their influence chiefly felt at the usual time of the occurrence of such fits.

The *petit mal* variety of epilepsy is much less amenable to treatment, in my experience, than are the severer attacks. Yet even in those cases much can be done by "trying"; and in reference to epilepsy, especially in its unusual manifestations, I am convinced that much may be effected by diligent and intelligent trial of different drugs.

In epilepsy I regard bromide as our "sheet anchor." I am not particular as to the salt except that I scarcely ever now use bromide of potassium. It is very depressing, it tends more to the production of acne, and I do not think it is any more efficacious than the salt of sodium, ammonium, or strontium. The last named is particularly useful if the tendency to acne is great. In many cases it can be given without producing any acne at all. In the ordinary case of epilepsy with frequently recurring attacks it is best to give from 15 to 20 grains of one of these salts three times daily. To prevent depression, which, however, is not so apt to arise if bromide of potassium is avoided, it is well to combine a small dose of nux vomica. This certainly prevents or minimises depression and it does not interfere with the action of the bromide in controlling or modifying the attacks. If acne is troublesome it is well to give with each dose of medicine a small dose of arsenic. I do not think that arsenic has any effect on the attacks but it certainly tends to prevent the acne. It is well to let the dose be small. I have known arsenical neuritis produced in an epileptic from the use of three minims of Fowler's solution three times daily with bromide continued over several months.

In cases of so-called nocturnal epilepsy, which, as I have said, are to be regarded rather as cases in which the fits tend to occur during sleep, the best plan to follow is to give a dose of bromide, from 30 to 40 grains, at bedtime or an hour before it. It is also found beneficial to combine with this a dose of digitalis (three or four minims of the tincture) and also a little nux vomica (from three to four minims of the tincture). In these cases, as has been said, there is a probability that the attacks, occurring as they so often do during sleep only, may be determined by some modification of the circulation which occurs during sleep. It is found in practice that such drugs as digitalis and nux vomica, which certainly steady the circulation, add materially to the efficacy of bromide in such cases.

With reference to the treatment of another class of cases to which I have referred—those in which the attacks are apt to occur in the morning during the time of dressing, it is very important to pay special attention to the time of administering the bromide. The best plan to follow is to give a dose of bromide at bedtime and to arrange that the patient has a small meal—e.g., half a glass of milk or, better, a cup of weak tea with some bread and butter immediately followed by a dose of bromide—half an hour before getting out of bed. This is usually effective in preventing the attacks from occurring in the early part of the day. If they are moved to another part of the 24 hours one must, so to speak, follow them to this fresh time of occurrence and administer a dose of medicine in reference to that. But as a rule it is not the case that fits move in this way. If they occur in the morning and they can be controlled then by the measures I have alluded to, they are usually kept in abeyance.

As an adjuvant to bromide, in many cases especially of very chronic epilepsy, borax is often very useful. In very few cases is borax alone efficacious, but in combination with bromide it occasionally seems to have, so to speak, a reinforcing effect on the bromide, so that a dose of bromide which alone is inefficacious in controlling attacks will in combination with borax frequently act quite effectively. Thus, in the case of a girl who was admitted to hospital with severe and frequent fits, most drugs had been tried during her six weeks in hospital but nothing was efficacious. When she again came under my care as an out-patient I put her on bromide and borax, and since then, now three years ago, she has had no fit. I saw her recently.

But in reference to epilepsy, although broad general principles may be applied to consideration of treatment, it is often impossible to tell what drugs will be efficacious. This is especially true of *petit mal*. In this condition belladonna may be useful, so may small doses of chloral hydrate, so may zinc bromide, and that in cases in which the other bromides have been quite inefficacious. I was much struck by the case of a little girl recently seen at hospital suffering with daily attacks slight in character yet severe enough temporarily to abolish consciousness. I put her on doses of eight grains of bromide of sodium three times daily. I saw her in two weeks and she was no better. I increased the dose to 12 grains and in two weeks she came to report, or rather her mother did, that she was worse—the attacks more frequent and rather more severe. I then stopped the bromide and put her on five minims of tincture of belladonna thrice daily, and since then, now more than six months ago, she has had no attacks at all. Such treatment is no doubt empirical treatment, but so is most of our treatment, and I for one can certainly not regard that as a bar to its use.

Such, then, are a few of the points which I should like to lay before you in reference to treatment in nervous diseases. We are sometimes reproached because we can do so little for

nervous troubles. But I trust that what I have said will encourage you to try whether many of these so-called very intractable diseases are not amenable to treatment, at least in some of their manifestations.

Welbeck-street.

DIRECT ŒSOPHAGOSCOPY: A UNIQUE EXPERIENCE.

BY HERBERT TILLEY, B.S. LOND., F.R.C.S. ENG.,
SURGEON TO THE EAR AND THROAT DEPARTMENT, UNIVERSITY COLLEGE HOSPITAL, LONDON.

As considerable interest is being taken at the present time in the examination of the œsophagus, larynx, trachea, and bronchi by the direct method of illumination, I have thought that the following case may be worthy of publication in that it probably establishes a record, and, what is more valuable, is not without its moral.

On Feb. 27th I was requested by Dr. H. R. Roger-Smith of Hampstead to meet him in consultation concerning a baby, only four days old, who had swallowed the teat of a "comforter." That this was lodged in some portion of the œsophagus was obvious because it was impossible for the child to swallow milk, and each attempt to do so was followed by a return of the fluid with coughing and "slight fits of choking." The little patient was very restless, but beyond this he seemed little the worse for the unhappy accident associated with the first solid meal of his existence.

As I had with me a set of Brüning's instruments for the direct examination of the larynx, trachea, and œsophagus, we decided to attempt the localisation, and if possible the removal, of the foreign body. Dr. Roger-Smith administered chloroform to the infant and with his head slightly extended over the table I passed the smallest-sized bronchoscope into the œsophagus, and when nearing the cardiac end (probably the phrenic constriction) a white pultaceous mass was observed which was easily removed with a long slender pair of laryngeal forceps. It proved to be cotton-wool which the nurse thought "the teat was stuffed with," but she was sure that the teat had also been swallowed. The bronchoscope was again passed; the grey rubber cone was recognised and immediately withdrawn from the œsophagus. The patient seemed none the worse for this early experience in life and within a few hours was nursed at the breast without any inconvenience.

There can be no question as to the immense superiority which the direct examination of the œsophagus (or lower air passages) enjoys over older methods, and this is particularly the case when foreign bodies are imbedded in its walls, or a pathological obstruction exists the nature of which it may be of vital importance to determine. From a surgical point of view few experiences could be more delightful that those afforded by the successful use of direct-vision instruments in such a case as is detailed above.

Let us imagine the alternative in this the first child of young parents. We should have been obliged to leave the foreign body where it was in the hope that it would find its own way into the stomach and onwards to the exterior; this might have been rendered difficult, or even impossible, by the swollen pledget of wool which filled the teat. Or, we might have passed a small œsophageal bougie and thus aided the progress of the foreign body into the stomach. In either case any delay would have involved very great parental anxiety which in the case of the mother might have interfered with convalescence, lactation, and so on. As it happened, we were enabled through the brightly illuminated tube of the bronchoscope to explore every inch of the œsophagus and in a moment to recognise and remove the source of trouble.

It would be idle affectation to suggest that the use of the instrument requires little practice and no degree of skill, but as I have previously remarked,[1] these can be acquired even more readily than proficiency in the use of the laryngeal mirror.

If it is possible to draw a moral from the history of this case, it would seem to be that a more strenuous veto should be placed on the use of "comforters." But so long as the world goes round and it is an instinct in members of the human race to save themselves trouble, so long, probably, will "comforters" occupy an important place in the outfit of the thoughtless nurse and in the nurseries of young children. It would almost seem incredible that a child only four days old should be provided with such a pernicious remedy for securing quietness.

[1] A detailed and illustrated article relating to "Direct Examination of the Larynx, Trachea, and Œsophagus, by Brüning's Instrument," may be found in THE LANCET of Nov. 7th, 1908, p. 1359.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

TWO CASES OF FULMINANT OR MALIGNANT CEREBRO-SPINAL MENINGITIS.

BY NATHAN RAW, M.D. DURH., M.R.C.P. LOND., F.R.S. EDIN.,
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THE two following cases of malignant cerebro-spinal meningitis are of great clinical interest as showing the virulence and intensity of the symptoms with a rapidly fatal termination. In both cases the men were young and apparently healthy when struck down with this disease and in both cases the exudate was copious and purulent, although entirely confined to the spinal cord in one, and in both cases an organism was found corresponding to that described as being the specific cause of cerebro-spinal meningitis. It is difficult to place these cases in any special category of disease otherwise than by classifying them as sporadic cases of cerebro-spinal meningitis which usually occurs in epidemic form.

CASE 1.—A man, aged 26 years, a butcher, was admitted into Mill Road Infirmary on Feb. 2nd last in a high delirious condition. His wife stated that he was in perfect health until a week previously, when he got a severe wetting which caused a general cold. Three days before admission he was suddenly seized with intense headache, photophobia, and great pain down the centre of his back. He vomited and was unable to retain any food. His symptoms rapidly became aggravated, and he quickly passed into a state of semi-consciousness with wild delirium. On admission the man lay on his side curled up in bed with his head thrown back and his knees drawn up nearly to his chin. There were marked rigidity of the muscles of his neck and back, and great pain on attempting to move him. He was unable to give any history of himself and simply groaned when touched. Kernig's sign was well marked. There was an erythema or dusky mottling of the skin which rather suggested typhus fever. The temperature, curiously enough, was not raised at all, in fact it was inclined to be subnormal, but the pulse was very rapid and feeble, ranging from about 126 to 140. There was marked congestion of both lungs but no evidence of pneumonia. The muscles of the lower limbs and back remained in a state of spasm with occasional sudden attacks of twitching which evidently caused him great pain. He had incontinence of urine and fæces. The case was looked upon as one of cerebro-spinal meningitis and lumbar puncture was performed by Dr. A. Todrick. Pus was found under great pressure and several drachms were removed for examination. Dr. Todrick's report is as follows: "Polymorphonuclear leucocytosis present, diplococci corresponding to the micrococcus meningitidis intracellularis of Weichselbaum present, and are both intra- and extra-cellular." The man became rapidly worse with aggravation of motor and sensory symptoms and died two days after admission. No treatment was of any avail excepting relief from a hypodermic injection of morphine.

Post-mortem examination.—This was made 23 hours after death. The body was that of a well-developed and muscular man. Rigor mortis was very pronounced and cadaveric lividity was present. On opening the chest the lungs were found to be in a state of acute congestion throughout, but no evidence of consolidation could be found. The bronchi and trachea were acutely congested and full of mucus. The heart weighed 10½ ounces and in shape and appearance was fairly normal. No valvular lesion was present, but there was slight atheromatous change at the root of the aorta. The stomach and intestines appeared to be healthy. The kidneys weighed

four ounces each and showed congestion. The spleen was enlarged and weighed 10 ounces; it was soft and diffluent. The prominent feature of the brain and spinal cord was acute congestion and there was a thick layer of purulent exudate in the subarachnoid space throughout. This exudate very much resembled in appearance that seen in pneumococcal meningitis. It extended through the sulci on to the vertex on both sides but was more marked on the surface of the pons and the upper surface of the cerebellum, although it practically extended over the whole base of the brain. The spinal canal contained a large amount of pus and would be in life under considerable pressure. The brain, although the appearances were faded, showed the exudate, whilst smears from the exudate under the microscope show the diplococci well.

CASE 2.—This was an extremely sad one, as, although only 17 years of age, the patient was the only support of his mother. He was a printer and had evidently enjoyed good health until three days before admission. He gave a history of accident a week before the illness commenced, but this could not be verified. Three days before admission he was suddenly seized with a rigor, intense headache and vomiting, pain in the abdomen, and violent epistaxis. The medical man in attendance diagnosed the case as meningitis and sent him into hospital. On admission the patient presented practically the same symptoms as the previous case, so that it is not necessary to recapitulate them. With this exception, that whereas the first case had a subnormal temperature throughout, the present one had a very high temperature and all the accompaniments of high fever. He had intense tenderness of the calves and feet, whilst he could not bear his abdomen to be touched. He lay curled up in bed, and although there was no retraction of the head the muscles of the neck were rigid and he kept his head stiff. Up to the end of the second day he was conscious and able to answer questions, and as he presented no cerebral symptoms it was evident that the great brunt of the attack was confined to the spinal cord. Ehrlich's diazo reaction was negative; there were no albumin and no urethral discharge. Kernig's sign and tache cérébrale were marked. The pupils were equal; no focal symptoms were present. No enlargement of the spleen or spots could be detected, although, as in the previous case, there was a dusky mottling of the skin of the back and buttocks resembling that seen in typhus fever. The patient became very restless, the temperature reached 105° F., and the pulse 130. He developed delirium and died three days after admission. Although during life his chest was repeatedly examined no evidence of pneumonia could be detected.

The day after admission lumbar puncture was done by Dr. R. G. Wills who found a thin, creamy pus under great pressure, and he was able to draw off over one and a half ounces without difficulty. In fact, as he says, it spurted out of the needle. His examination of the fluid was in all respects similar to Case 1. The diplococci were very numerous but were chiefly extra-cellular.

Post-mortem examination.—This was made 20 hours after death. The point of interest was that beyond the brain being congested and the ventricles distended with serous fluid there was nothing abnormal to be seen. The spinal cord was, however, very different. From the foramen magnum to the cauda equina was a purulent pachymeningitis (interna and externa). The spinal canal contained thin creamy pus in large amount. This suppuration had extended through the foramina to the muscles of the back in the dorsal region. There was no evidence of pneumonia or any other disease.

The points of chief interest in these virulent cases are first, "the diagnosis"; and secondly, "the cause." They must, I think, be regarded as malignant or fulminant cases of cerebro-spinal meningitis, occurring as sporadic cases, and the appearances of the patient and also the microscopical films support this view.

The differential diagnosis is from epidemic cerebro-spinal meningitis, typhoid fever, broncho-pneumonia, and influenza. All of these were excluded during life and the post-mortem examinations revealed no other lesion.

With regard to treatment, beyond relieving symptoms of pain and incontinence we never had a chance. The cases ran such a rapid and virulent course as to make it apparent that no treatment could be of any avail. I wished to use Flexner's specific, but both patients were dead before I could obtain it. The results of this treatment in America have been so good as to encourage us in this country to use it and I have obtained a supply which I will certainly use in any future case.

Liverpool.

NOTE ON A CASE OF RETAINED OVUM.

BY J. LIONEL STRETTON, M.R.C.S. ENG.,
SENIOR SURGEON TO THE KIDDERMINSTER INFIRMARY AND CHILDREN'S HOSPITAL, ETC.

THE patient, aged 54 years, was sent in to the Kidderminster Infirmary by Dr. D. G. Dykes on August 29th, 1908, suffering from strangulated femoral hernia (right). It had been strangulated for 60 hours. Operation was immediately performed and a radical cure was attempted by excision of the sac and pinning down Poupart's ligament to the os pubis with a metal staple. In the course of the operation it was noticed that the patient had a large procidentia of the uterus. She made an uninterrupted recovery from this operation and then desired to be relieved of her other trouble. It was decided to ventrifix the uterus. The operation was performed on Sept. 1st and it was then discovered that she had a large, stony, hard lump in the left broad ligament. This was removed and the cavity in the broad ligament was sewn up. The uterus was fixed to the under surface of the recti muscles and the wound was closed. From this operation the patient also made an uninterrupted recovery. She is now able to get about quite comfortably and has no trouble from the hernia or the procidentia.

On further inquiry it was ascertained that the patient had been married for 32 years. She had had two children born soon after marriage (in the first three years) and had had two miscarriages since, but she could not remember the exact dates. The first of these was a formed child; the last one consisted of blood and clots. She was not attended by a medical man, but was in bed for a week. It was certainly more than 20 years ago. This is probably about the date of the ovum.

The lump removed consisted of a globular mass five inches by three inches, of smooth surface and stony hardness. On sawing it through it was found to contain a well-formed female fœtus of about four and a half months. It was in perfect preservation and all the organs—heart, lungs, intestines, &c.—could easily be distinguished. The envelope was everywhere invaded with calcareous deposit.

Kidderminster.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

PATHOLOGICAL SECTION.

Portal Thrombosis.—Pathology of the Spleen.—Pulmonary Hypertrophic Osteo-Arthropathy.—Myelopathic Albumosuria.—Fatal Streptothrix Infection with Primary Lesions in the Lungs.

A MEETING of this section was held on March 16th, Mr. S. G. SHATTOCK, the President, being in the chair.

Mr. HENRY CURTIS and Mr. T. W. P. LAWRENCE communicated a paper on a Case of Portal Thrombosis associated with Impermeable Stricture of the Urethra, and Double Mitral Disease, with Fatal Hæmatemesis. The patient (an Englishman, aged 52 years, living in Rhodesia) had undergone external urethrotomy four days before his death. The authors, after describing the clinical course of the case, said that the record was of interest in connexion with the pathology of portal thrombosis, especially as, being actually associated with operative measures, it might have been classed with cases of post-operative thrombosis, so well known to occur after abdominal and, even more frequently, pelvic operations. The post-mortem and microscopical evidence proved, however, that the portal thrombosis resulting in occlusion more or less complete, and fatal by hæmatemesis 23 days after admission, preceded by a considerable time the urethrotomy performed under local analgesia, there being found long-standing chronic pylephlebitis but no cirrhosis of the liver, a condition stated by Langdon-Brown to be present in rather over 47 per cent. of all the cases of pylethrombosis occurring

at St. Bartholomew's Hospital, London, in 33 years, and to be by far the commonest cause thereof. The spleen was found to be very large, the stomach was full of blood, the remainder of the intestines being normal. The specimen of the portal vein exhibited (and also illustrated by a sketch) indicated marked chronic pylephlebitis, and with the superior mesenteric vein it was, to a great degree, but not completely, occluded by clot, the splenic vein being completely blocked. The inferior mesenteric vein, however, remained patent. The microscopic preparations of the various vessels and tissues, also exhibited, confirm the presence of pylephlebitis and absence of cirrhosis of the liver. The portal infection was considered to be septic in nature, resulting from the long-standing stricture of the urethra, two sacculi being found in the bladder at the necropsy, lined with dirty ash grey-green mucous membrane, from chronic retention. References were made to the extreme difficulty in diagnosis in cases of portal thrombosis, as pointed out by Rolleston, Langdon-Brown, and others, and to an interesting case of splenic vein occlusion recorded by Bland-Sutton. Suggestions for treatment were made, especially with a view to preventing the fatal issue by hæmatemesis, usually dependent on splenic vein thrombosis, splenectomy being advocated where pylephlebitis can be demonstrated to be absent after laparotomy. In thrombosis of one or other of the mesenteric veins, with intestinal hæmorrhage, lateral anastomosis was advocated (and perhaps, as in the case recorded by Langdon-Brown, also suturing the great omentum to the abdominal wall), with a view to increasing the collateral circulation and also of short-circuiting the part of the bowel rendered *hors de combat* by the thrombosed vessel. Attention to the state of the blood was necessary, however, as pointed out by Rolleston. In the presence of excessive calcium salts and abnormal coagulability several days' treatment with citric acid, grs. xv. ter die, was advisable prior to any exploratory laparotomy.

Mr. L. S. DUDGEON and Dr. W. O. MEEK communicated a contribution to the Pathology of the Spleen. The investigation consisted in a histological and bacteriological examination of the spleens of 87 subjects. The cases comprised examples of various acute and chronic infective and non-infective diseases. Certain points of interest in the bacteriological findings were mentioned. Out of seven cases of pernicious anæmia streptococci were grown on only one occasion, and in this instance the patient had died with acute lobar pneumonia. The streptococcus pyogenes was the organism present. In six cases of acute pneumonia the pneumococcus was recovered only once, in the remaining cases the cultures proved sterile. This, the authors considered, might possibly be due to the fact that the bodies were kept in a freezing chamber in the mortuary. On the other hand, out of four cases of typhoid fever the bacillus typhosus was obtained from all. In some instances streptococci and staphylococci were obtained in cultures from spleens which showed no excess of inflammatory leucocytes on histological examination. In about one-half the number of spleens examined the organ was appreciably large. The two main causes of this enlargement were a distension of the viscus with blood, situated either in the sinuses or elsewhere, and a thickening and fibrosis of the walls of the sinuses. Striking examples of this distension with blood were found in cases of typhoid fever, pneumonia, septicæmia and pyæmia, toxæmic jaundice, and pernicious anæmia. The red blood corpuscles in many of these cases showed evidence of destruction. In certain cases of chronic disease, especially in cirrhosis of the liver, the increase of fibrous tissue in the spleen was very marked. The appearance of the Malpighian bodies showed marked variations according to the ages of the patients. In the cases of infants and young children they were usually prominent and showed well-marked "germ centres." In adults they were generally atrophied. In some cases mitotic figures were seen in large endothelial cells at the centres of these bodies. In other cases of acute disease the lymphocytes in the Malpighian bodies showed fragmentation and disintegration, while endothelial cells were ingesting lymphocytes and their remains. In the majority of instances of acute infective diseases the finely granular polynuclear cells were present in film preparations in excessive numbers. The highest percentage of these cells met with was 40. With excess of these cells, an excess of mononuclear neutrophiles was usually found. In four cases of typhoid fever the polymorphonuclear cells amounted to only 4 per cent. Endothelial cells were increased in numbers in most instances of acute bacterial infection. They were of several varieties and often phagocytic to erythrocytes and bacteria. Eosinophiles, plasma cells, and small giant cells of lymphadenoid type were seen in small numbers. Small and large lymphocytes were the predominant cells in film preparations, their relative number depending on the proportion of other cells present. Nucleated red cells, both normoblasts and megaloblasts, were found in cases where anæmia was present during life. Their presence and number could be accounted for by the condition of the blood during life. Phagocytosis of red blood corpuscles was observed in almost every spleen examined, the cells which take an active part in this phagocytosis being almost entirely endothelial cells which may be seen lying free in the lumina of the sinuses or attached to the sinus walls. This phenomenon varied very markedly and was especially striking in cases of pneumonia, typhoid fever, and pernicious anæmia. The affinity of the ingested red cells for acid dyes was often markedly decreased and strongly suggested the effect of hæmolysis. As further evidence of this action, in some instances the splenic sinuses contained, in addition to faintly staining red corpuscles, a granular débris and a homogeneous substance suggesting serum, both of which stained with an acid dye. In a majority of cases where phagocytosis of erythrocytes was well marked the spleen contained large quantities of pigment. This varied in colour, being golden-brown, dark brown, or almost black. It was scattered through the spleen, inside the wandering cells, or in the cells lining the sinus walls. It was readily observed that the degree of pigmentation was in direct relation to the phagocytosis of the erythrocytes and the apparent hæmolysis.

Dr. F. PARKES WEBER communicated a note on the Histology of the New Bone Formation in a case of Pulmonary Hypertrophic Osteo-arthropathy. The osteo-arthropathy was secondary to a mediastinal form of lymphadenoma (Hodgkin's disease) occurring in a woman, aged 21 years, whose case was described by Dr. Parkes Weber at the Clinical Section of the Royal Society of Medicine on Dec. 11th, 1908. Skiagrams taken during life showed the typical appearances of the "diaphysial type" of osteo-arthropathy, the shafts of the long bones being more or less completely incased by a cylindrical growth of new bone, whilst the joints themselves were very little affected. Microscopic sections of a decalcified piece of one of the long bones showed that the original compact bone of the shaft, relatively darkly stained, was separated by a very open meshwork of bony trabeculæ from a less deeply stained outer lamella of newly formed bone. This outer layer appeared in section to consist of a series of trabeculæ more or less parallel to each other and at right angles to the long axis of the shaft.

Dr. PARKES WEBER and Dr. J. C. G. LEDINGHAM contributed a note on the Histology of a Case of Myelomatosis (Multiple Myeloma) with Bence-Jones Protein in the Urine (Myelopathic Albumosuria). The patient was a woman aged 65 years. The protein excreted in the urine was of typical character and averaged 12 grammes per diem. At the post-mortem examination the bones examined were found converted into hard bony shells filled with a dark red opaque jelly-like substance and (in the case of cancellous bone) with the remains of the cancellous tissue. The jelly-like substance in question was seen on microscopic examination to consist of a diffuse sarcoma-like tumour formation, interspersed with fat cells and normal bone-marrow constituents. The tumour cells were shown by special methods of staining (Unna-Pappenheim, &c.) to be of the plasma cell kind, so that histologically the tumour was a form of "plasmacytoma." In many of the cells the nuclei were in process of disappearing (karyolysis) and the cytoplasm contained spaces filled with a substance probably allied to, or an antecedent of, the Bence-Jones protein excreted during life in the urine. No secondary growths were found in the lymphatic glands or anywhere else in the body outside the bones. None of the bones were fractured at the time of death. Good bony union was found to have occurred at the site of a fracture of the humerus which the patient sustained a few months before her death. The kidneys were practically free from disease.

Dr. J. M. BERNSTEIN showed specimens from, and described a case of, a fatal Streptothrix Infection with Primary Lesions in the Lung, of the nature of a suppurative pneumonitis. The disease ran a rapid course and the organism was found

as a Gram-positive acid-fast mycelium in the pus. Pure cultures were readily obtained as a surface growth on various media and typically on bouillon and potato. The organism exhibited a pleomorphism in cultures, the mycelium only appearing in very young cultures, whilst later three varieties occurred—viz., short branching filaments, spore-like bodies, and short rods resembling bacilli. Experimentally the organism was pathogenic for guinea-pigs and rabbits and more especially for the former, the testicular enlargement which was produced in these being strongly suggestive of the glanders inoculation experiments. The organism was probably the same as described by Eppinger and later by Stewart Macdonald, and experimentally these species had produced miliary nodules indistinguishable from the so-called histological tubercle. Tubercles of this sort occurred in the case described and in the giant cells acid-fast bacilli were found but no filaments of streptothrix, though further experiments were proceeding in the hope of producing those conditions.

OBSTETRICAL AND GYNÆCOLOGICAL SECTION.

Sarcoma of the Meso-salpinx.—Ovarian Cysts associated with Vesicular Mole.—Hydatidiform Mole with Albuminuria and the Kidney of Pregnancy.

A MEETING of this section was held on Feb. 11th, Dr. HERBERT R. SPENCER, the President, being in the chair.

Dr. F. J. MCCANN read a short communication on Sarcoma of the Meso-salpinx. The tumour was removed in May, 1908, from a woman aged 52 years. She was complaining of abdominal pain and loss of flesh. After the tumour, which was adherent to the omentum and intestines, was removed marked improvement was noticed for a short time but did not last long. The abdomen was reopened, but it was found impossible to do anything further. She died three weeks after the first operation. When the tumour was first examined it was thought to be a primary sarcoma of the Fallopian tube, but further investigation showed that the unaltered tube could be traced over one surface of the mass and that the growth had apparently originated in the cellular tissue of the meso-salpinx.

Dr. H. RUSSELL ANDREWS read a short communication on Some Cases of Ovarian Cysts associated with Vesicular Mole. He gave an account of four cases which had been under his own care: (1) a case in which a lutein cyst tumour with twisted pedicle was removed after the passage of a vesicular mole; (2) a case in which bilateral lutein cysts, one with a twisted pedicle, were removed 17 days before the passage of a vesicular mole; (3) a case in which small bilateral ovarian cysts, both suppurating, were removed after the passage of a vesicular mole; and (4) a case in which a small ovarian tumour was found while a vesicular mole was being removed from the uterus. This tumour became gradually smaller, and the ovary eventually returned to its normal size. He suggested that small ovarian tumours found in association with vesicular mole should not be removed unless they showed signs of twisting of the pedicle or suppuration.

Dr. G. F. BLACKER read a paper on a case of Hydatidiform Mole with Albuminuria and the Kidney of Pregnancy; sudden death from cardiac failure. The patient, a woman, aged 33 years, was admitted into University College Hospital on July 18th, 1908. On admission she was about 19 weeks pregnant, and for a few weeks had noticed some swelling of the eyelids and ankles, and some hæmorrhages had occurred from the uterus. The urine contained 50 per cent. of albumin, with hyaline and granular casts. She was placed on a strict milk diet and the albumin became much less abundant. She was found, however, to have developed well-marked signs of albuminuric retinitis. On August 17th and 19th there were some severe hæmorrhages from the uterus and the vision was found to be deteriorating. It was therefore decided to induce labour. Bougies were introduced into the uterus on August 21st, and it was found to contain a hydatidiform mole. In these circumstances it was decided to give an anæsthetic and to empty the uterus, but early on the morning of the 22nd the woman suddenly became collapsed after the administration of an enema, fainted, and died in a few minutes. A post-mortem examination showed that the liver was somewhat enlarged with cloudy and fatty changes in its cells. The kidneys were also a little enlarged and the cortex paler than normal. Microscopic examination of the kidneys showed marked cloudy swelling of the epithelium of the convoluted tubules and the glomeruli. The uterus reached nearly to the ensiform cartilage. The ovaries were occupied by a number of cysts derived mainly from the corpora lutea and they definitely contained an excess of lutein tissue. The interest of the case lay in the occurrence of the albuminuria of pregnancy with a hydatidiform mole and the presence of the lutein cysts in the ovaries. The case showed that it was possible for the albuminuria of pregnancy to develop in the absence of a fœtus, and seemed to lend some support to the hypothesis put forward by Veit and others that such albuminuria was the result of a toxin derived from the syncytium, the development of which was of course excessive in the case of a vesicular mole. Dr. Blacker considered the presence of the lutein cysts to be merely a coincidence, and that the changes which led to the development of the mole and of these cysts were similar in character and due to the same cause whatever its nature might be. He thought that in the future it would be considered unnecessary to remove such cysts especially in view of the fact that certain cases had been recorded in which after the expulsion of the mole from the uterus they had diminished very considerably in size. In view of the unfortunate termination of the case no doubt it would have been better to empty the uterus under an anæsthetic rather than to employ bougies to induce labour, and a lesson to be learnt was that it was never advisable to temporise in any case in which the presence of a hydatidiform mole in utero had been diagnosed.—The PRESIDENT said he had long thought a great deal too much importance was being given to these so-called lutein cysts. He thought that lutein cysts might in many cases be left alone.—Dr. CUTHBERT LOCKYER said that the points definitely known about these compound lutein cysts were that they were possessed of strikingly characteristic features both to the naked eye and on microscopic examination; secondly, that they were never found except in association with vesicular mole or chorion-epithelioma.—Mr. J. H. TARGETT referred to a case where he had performed a double ovariotomy during pregnancy and the tumours removed were typical lutein cysts. The patient subsequently miscarried and expelled a macerated fœtus. On careful examination it was found that a small portion of the placenta was mingled with the cysts of a vesicular mole.—Dr. R. H. PARAMORE suggested that the underlying cause of the clinical signs found in Dr. Blacker's case was a mechanical one and referred to the views of Ahlfeld on the causation of eclampsia.

SECTION OF ANÆSTHETICS.

Treatment of Shock during Anæsthesia.

A MEETING of this section was held on March 5th, Mr. RICHARD GILL, the President, being in the chair.

Dr. DUDLEY W. BUXTON, in opening a discussion upon the Treatment of Shock during Anæsthesia, pointed out that Dr. Crile's experiments had proved that shock was the result of exhaustion of the vaso-motor centres leading to a general fall of blood pressure. General anæsthetics acted similarly, causing depression of the nerve centres and fall of blood pressure. The theory that an anæsthetic, by being pushed until very profound narcosis resulted, could abrogate shock had been proved by experiment to be wholly fallacious. If the induction of narcosis were stopped short of the third degree—i.e., the stage of anæsthesia—danger undoubtedly resulted, since the patient's higher centres at such a time were dulled and not wholly unreceptive of impulses. Dangerous reflexes and irregular grades of anæsthesia were induced in such a state and the patient became liable to fatal syncope. Once, however, the third degree was obtained and the anæsthetic was evenly distributed throughout the tissues the patient was comparatively safe, and the quantity of anæsthetic required subsequently was much less. The deep reflexes, such as those resulting from insult to sympathetic nerves and plexuses, could not be prevented by any degree of narcosis; they could not be abolished until life was extinct. It had been shown that these reflexes, acting upon the vaso-motor centres, the heart, and the respiration, were dangerous in proportion to the depth of narcosis—i.e., after the stage of anæsthesia was established. Treatment lay rather in prevention. The hygiene of the patient, preparation extending over several days, avoidance of violent purging or enemata given just before the operation, judicious feeding, warmth, attention to posture, and the use of regulating apparatus permitting the anæsthetist to control both the strength of the

vapour and the quantity of the anæsthetic given were of the greatest importance. He also regarded as most important that oxygen should be given *pari passu* with the anæsthetic. For nervous persons and those who were unable to sleep the employment of the morphine-scopolamine method was valuable, as it soothed and also lessened the amount of anæsthetic required. Other alkaloids were less useful. Dealing with measures for resuscitation Dr. Buxton advocated in cases of collapse the inversion of the patient, perflation of the lungs with oxygen, and intravenous injection of saline solution and adrenalin. In shock these measures could be advantageously supplemented by direct pressure upon the aorta, bandaging the limbs with elastic webbing, rhythmic kneading of the heart muscle in abdominal sections, and the adoption of Crile's pneumatic suit. Acupuncture of the heart muscle, heart massage except by the abdominal route, and the use of injections of strychnine or other alkaloids were methods which had failed to prove themselves of any real value in emergencies. The systematic use of scientific apparatus for obtaining an actual record of the blood pressure during the performance of operations would be most valuable, Dr. Buxton considered, and would give material assistance both to the surgeon who operated and to the anæsthetist who controlled the depth of the narcosis.

Sir VICTOR HORSLEY said that shock due to anæsthetics was caused by overdosage and was proportional to the amount administered. He thought that the best resuscitative method was to give oxygen. Surgeons would not agree to the use of scopolamine or morphine as a routine before operations.

Dr. J. F. W. SILK said that he objected to the too long starvation which was so often used before and after anæsthetics, as this was an important factor in producing shock. He ordered nutrient enemata to be given before operations in cases where shock seemed likely to be very severe, and he referred to the necessity of regulating the amount of exposure of the patient and the heating of the rooms and passages. Once shock was established drugs were useless.

Mr. J. P. LOCKHART MUMMERY stated that adrenalin was useless, as its effects passed off within two minutes; atropine, ergot, and digitalis were also useless. The drug of the future in these cases was likely to be the infundibular portion of the pituitary gland. Morphine was valuable beforehand, at least in animals anæsthetised by ether.

Dr. J. BLUMFELD drew attention to a clinical point which had been omitted—namely, the condition of the reflexes as an indication helping one to distinguish between the condition of surgical shock and that of a similar state produced by an extreme degree of narcosis. It was very remarkable to notice how, at the end of a long operation, as for excision of the tongue and glands of the neck, the patient in an extreme degree of surgical shock, with pallor, almost imperceptible pulse, and very faint breathing, would yet show (if properly anæsthetised) a corneal reflex as brisk as in the early stage of anæsthesia, showing that the lowered condition of vitality was not due to the administration. Dr. Blumfeld also asked Dr. Buxton if he could throw any light upon the cases of delayed shock in which a patient left the operating table in an apparently very favourable condition, but a few hours afterwards was the subject of extreme shock or collapse.

Dr. BUXTON replied that this late shock was due to change of posture and partly also to a fall of temperature on going from a hot theatre to a cold room. In reply to Mr. LONGHURST, who asked for a routine treatment for a case of severe sudden collapse with failure of the respiration and circulation, Dr. Buxton advised that the anæsthetic should be stopped, the patient inverted, the mouth opened with a gag, and Laborde's method of rhythmic tongue traction practised, while oxygen was administered. If further treatment was required artificial respiration by Howard's method should be performed and saline solution infused by someone else while the anæsthetist was thus employed.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

Exhibition of Cases.—The Medical Examination of School Children.

A MEETING of this section was held on Feb. 26th, Mr. SYDNEY STEPHENSON being in the chair.

Dr. F. W. HIGGS, on behalf of Dr. EDMUND CAUTLEY, showed: 1. A case of Cerebral Diplegic Spasticity in a boy, aged six months, which came on with rigidity in the back and limbs and retraction of the head at the age of seven weeks. The boy improved on a mixture of bromide and chloral. Mr. N. Bishop Harman found the left disc unduly red with a few pigment spots along the course of one vessel. The condition was ascribed to an attack of encephalitis followed by cerebral sclerosis of the motor region. 2. A Mongolian Imbecile, aged seven and a half months. 3. A boy, aged four and a half years, suffering from Abdominal Tuberculosis. The abdomen was enlarged with a band stretching across the upper part, giving the impression of a coiled up and matted omentum, containing caseous matter. He had been treated with tuberculin. The opinion of members was asked on the advisability of attempting the removal of the caseous matter by surgical means, or on continuance of the general methods of treatment and larger doses of tuberculin.—Mr. W. MILNER BURGESS said that if the lungs were not affected he would advise operation.—Dr. HIGGS replied that although there was no evidence of infection of the lungs he thought that the case should not be operated upon, as some of the masses were probably due to adherent coils of intestine and contained caseous glands.

Mr. SYDNEY STEPHENSON showed a child, aged one and three-quarter years, with a soft, doughy swelling situated over the right half of the vertical portion of the frontal bone and extending into the right upper eyelid and also into the temporal and parietal regions. It was impossible to say for certain what the condition was, but he thought that it might be a plexiform neuroma, and he hoped to excise a small portion of the tumour for microscopical examination.

Mr. W. M. MOLLISON showed a child, aged two years, with Absent Abdominal Muscles. The abdomen was very pendulous and the walls were thin and lax. The bowels kept regular and there was no difficulty in micturition. No electrical response could be obtained from the abdominal wall. There did not appear to be any distension of the bladder or thickening of the ureters.

Mr. J. P. LOCKHART MUMMERY showed a child who had suffered from Acute Epiphysitis of the Lower End of the Femur at the age of one year and seven months. After operation the abscess cavity remained at the lower end of the diaphysis, which was scraped out, washed with strong formalin, and filled with sterilised paraffin wax, the wound being stitched up again. The general health of the patient was good, but a small sinus remained from which a little clear fluid and occasionally some of the wax were discharged for about six months. Two years had now elapsed since the first operation, and there was no appreciable deformity of the bone or shortening of the limb, and x ray photographs showed that the cavity in the bone had almost disappeared. The infection was a mixture of streptococci and staphylococci.

Dr. O. F. F. GRÜNBAUM showed a case of Hirschsprung's Disease, or chronic dilatation of the colon. A child, aged four years, was admitted to hospital in August, 1908, suffering from fits and constipation. The abdomen was enormously distended, the skin being tight and the superficial veins prominent. On administering an enema an enormous result was obtained, and on repeating this at intervals the child returned to a normal condition. The child had been re-admitted twice since with a similar condition. Improvement followed rapidly each time upon the administration of enemas. The risk of colectomy was so great that Dr. Grünbaum, having consulted with his surgical colleague, considered that so long as the child could be kept in a healthy condition with suitable treatment no operation should be done.—Dr. G. A. SUTHERLAND said that in all the cases which he had seen the patients had died. As the prognosis was so bad and the patient was at present in such a favourable condition it would be well to operate now.—Mr. LOCKHART MUMMERY said that Dr. Sutherland spoke of operation; but what operation should be done? The mortality of colectomy in a number of cases in this condition which he had collected was 75 per cent. That was because the operator could not bring the bowel up and make a spur of the abdominal wall. All that could be done was to form a fæcal fistula at the dilated portion of the bowel, and in most cases the bowel had torn away from the abdominal wall and the patient had died from peritonitis. The only operation likely to give permanent results was the excision of the dilated portion of the colon. This was a serious proceeding, but even if successful the colon might become re-dilated. He quoted four cases in which this had occurred. In a case which had gone on to

adult life, a man aged 23 years, he had done appendicostomy, the bowel being washed out daily. It was now six months since the operation and the man had had no obstruction.

Dr. GEORGE CARPENTER, in opening a discussion] on the Medical Examination of School Children, said that the Board of Education in its Circular No. 582, dated Jan. 23rd, 1908, addressed to local education authorities on the subject of the medical inspection of school children, refrained from issuing a complete set of forms, thinking it expedient to leave considerable latitude in regard to the particular forms or schedules. A schedule of medical inspection was, however, issued wherein the Board of Education indicated the particulars, attention to which it regarded as constituting the minimum of efficient medical inspection. Dr. Carpenter expressed the opinion that the Board of Education, in refraining from issuing definite forms, intended to allow the local authorities to incur any odium attaching to this official work—in other words, the local medical inspector of the schools would perform the rôle of Jonah should a storm arise. The feelings or prejudices of parents had to be considered, according to the statement of the Board. These feelings and prejudices hampered the medical man in the performance of his duties and marked him out for popular sacrifice, to escape which he was entitled to official sanctuary. The schedule of medical inspection set forth by the Board was impracticable and unpractical, and to make it workable a practical clinical chart had to be designed. Dr. Carpenter pointed out the far-reaching nature of the indications in the schedule, copies of which were provided at the meeting, and described how, to facilitate medical inspection in a London suburb the local education authorities of which had engaged him to examine some hundreds of these school children, he drew up a practical form comprising all the requirements contained in the Board of Education Circular No. 582 to local education authorities. [Dr. Carpenter's form was placed in the hands of members of the section.] Dr. Carpenter then described the methods which he had adopted in inspecting the children. They were undressed, wrapped in a blanket, placed on a couch and a thorough medical inspection was made in the best room that could be obtained at the particular school for the purpose. In many instances the parents were present, and in all cases one of the schoolmasters or schoolmistresses. Dr. Carpenter then read extracts from the letters which he had received objecting to the medical examination. The chief objection appeared to be that to the examination for the presence of adenoids, and one parent stated that the same rug or blanket in which the child was wrapped was used for each and every child. In response to the letter from the clerk of the local education authority in reference to parents' complaints, the Board of Education arranged for the representative of the local education authority to attend at the Board of Education to discuss the matter. Dr. Carpenter, however, not being notified until the morning of the interview was unable to attend. The local education authority appeared to consider that to undress children for the purpose of medical inspection was superfluous and unnecessary, and that the heart could be easily auscultated by exposing a small cutaneous area over the left nipple. Dr. Carpenter went on to say that it was obvious that if the medical examiner did his duty and examined properly, and if the parents objected, he need expect neither support nor encouragement from the local education authority nor from the Board of Education. If, on the other hand, he did not perform his duties properly his functions were parasitic rather than medical and he became an extra and unnecessary burden on the rates and the taxpayer. What medical man was there who understood his profession, and who knew his business, who could pronounce by looking at a child whether such child were healthy or not? If these were really the well-considered views of the Board of Education, then the sooner it was instructed by men who had had clinical experience the better for the country. If they were to have medical inspection of elementary school children let it not be a sham. The information demanded by the Board of Education in its Circular No. 582 could not be obtained by any such antiquated methods. Dr. Carpenter then read notes of the various deformities, defects, and diseases which he had found in his examination of 552 presumably healthy elementary school children of a London suburb who were undressed and properly examined. Over 200 had rickety deformities in varying degrees. In 391 the teeth were carious. The tonsils were enlarged in 119 and in 129 there were adenoids, the nasopharynx in 34 being completely blocked by growth. In 181 the deep cervical glands were enlarged, in 172 the submaxillary, and in 337 the superficial cervical. 29 children had bronchitis, one pneumonia, and one cirrhosis of one lung with a transposed heart. This last child looked particularly well and had rosy cheeks and under the quaint instructions of the Board of Education would have been excluded from any searching examination. Of skin complaints two had xerodermia, one psoriasis, and seven pediculi corporis. These defects were discovered by examining their skins and not by looking at their waistcoats and pinafores. To many examiners of school children who took a pride in their work, the class of men the Board of Education ought to enlist, it was a matter of vital interest to know how much support they would receive in their arduous duties from the people who had set them their task. The legislature, when it ordered medical inspection, at the same time authorised attention to the health and physical condition of the children. Before there could be treatment there must be diagnosis, and diagnosis must be preceded by medical examination. The present instructions to local education authorities by the Board of Education on the way to conduct a medical inspection could only be viewed as an ill-advised encouragement to medical inspectors of elementary school children to pocket the fees and neglect the work, and so rob the Act of most of its value.

Dr. F. E. FREMANTLE (medical officer of health of Hertfordshire) said that he approached the matter from a different standpoint from that of Dr. Carpenter. As county medical officer his work was to superintend the inspection of 47,000 school children in 33 sanitary districts. The work was actually done by medical practitioners who were engaged in clinical work and were in touch with the conditions under which the children lived. The inspection was done three times during a child's school life. The Government in Britain went slowly and the inspections might be more frequent later. The reports were made on cards 10 inches by 6 inches, suitable for filing. The scheme drawn up by Dr. Carpenter could not be beaten for comprehensiveness, but as a record it would not be worth having unless the examiner were paid at least a guinea a child, to which he, as a ratepayer, would strongly object. That showed the fundamental difference between Dr. Carpenter's and his own points of view. The public were the ultimate masters, and the Government took the view that the matter must only be carried as far as the public wished. The point was so to carry out the inspection as not to arouse feelings which the inspector had no right to arouse. The Education Department wanted inspection, not examination. The object was not to detect the one in a thousand defective.

Mr. BISHOP HARMAN said that when he looked through Dr. Carpenter's schedule he felt admiration for Dr. Carpenter's energy. The object of the school inspection was to treat the diseases of the children. Dr. Carpenter's misdirected energy was due to the fact that he had spent a good deal of his life in the wards and out-patient departments of a children's hospital, where the children were necessarily diseased, and that fact of disease had become an obsession. The person of most use to the medical inspector was the teacher. He believed the cry of degeneration was an extremist one.

Dr. G. E. SHUTTLEWORTH said his experience had been exclusively with children suffering from mental defect. It was not easy to come to a conclusion as to a child being healthy without going into some detailed examination. It was most important to decide whether the heart was sound, especially in view of the school drill, and some drills in particular. He did not agree that the teacher could always give information as regards the hearing and sight. If any medical inspector could do justice to the 24 questions on the Board of Education schedule with the marginal notes in ten minutes he must be an extraordinary person. A good plan was only to examine a certain number at each visit.

Dr. W. EWART said that it stood to sense that mere inspection of a child could not give any idea of the state of its inside. By paying careful attention to the early stages and probabilities of tuberculosis very much could be done towards preventing that disease.

Dr. DAN MCKENZIE said no doubt all present would feel some sympathy with both the views which had been brought forward. For any benefit to be derived from medical examination it must be thorough. Yet he believed that it would be a long time before parents would submit their

children to a proper examination, and the document of the Board of Education was as much as one could expect at present. He believed, however, that Dr. Carpenter's speech would hasten a more perfect system. School cliniques in many parts of the country had much to recommend them, but in London and other large cities containing many suitable institutions they would be but waste of energy and time. There was only one way of examining for adenoids—namely, by putting the finger into the naso-pharynx. It was disagreeable and painful and was sure to raise opposition. But the teacher would soon be able to select the probable subjects of adenoids, and only a certain proportion of children would be examined for them. The throat could be examined without pain.

Mr. S. F. ROSE said that dental caries was very prevalent, 85 per cent. to 90 per cent. being subject to it. As dental surgeon the work of inspecting the mouth was not difficult. The requirements as to stopping or extraction should be carefully noted. Syphilitic teeth were not important in that connexion because they could not be treated.

Dr. CARPENTER briefly replied.

MEDICAL SOCIETY OF LONDON.

Coroners and Medical Practitioners.

A MEETING of this society was held on March 22nd, Mr. C. B. LOCKWOOD, the President, being in the chair.

Mr. WALTER G. SPENCER said that the difficulties which had arisen in the relationship between coroners and medical practitioners were due, amongst other causes, to the differences in the education of the lawyer and the education of the medical man. The legal mind was fostered on authority, but the law in spite of itself was becoming more and more immersed in the flood of modern science and medicine. Death certification depended on medical nomenclature, upon medical nomenclature were based medical statistics, and upon medical statistics were built up the policies regarding public health and preventive medicine which constituted some of the most satisfactory work of modern statesmen. The correct findings as to the cause of death were linked up with Acts of Parliament. If one plunged into the middle of the subject one came at once upon that hoary institution the coroner's jury, which public superstition held to be the supreme arbiter of facts, whilst it was evident that to a very large extent the members comprising the juries were ignorant of the meaning of the words they heard used. It was needless to discuss verdicts arrived at by juries in the absence of post-mortem examinations, or, it might be, without even a statement from the well-informed practitioner who had been acquainted with the case throughout. In such circumstances the conclusions arrived at must be merely presumptive in character, and the medical profession could not be expected to regard those verdicts seriously; also from the point of view of public health statistics derived from such verdicts might be erroneous. The recent Children's Act was highly to be commended, but verdicts at inquests involving questions as to overlying, stillbirth, and infanticide were of no value for statistics in the absence of post-mortem examination. It was obvious that whenever possible necropsies must be carried out by those persons who had special knowledge and experience, for it was not only a question of demonstrating one likely cause of death; at any necropsy other points connected with and affecting public health might be laid bare. It followed, therefore, that advantage must be taken of special pathologists, such as were already connected with their hospitals, and who formed the nucleus of a body of men best fitted to draw up a preliminary report for a coroner arranging to hold an inquest, a report which would be a helpful guide to him when considering the best witnesses to call. Supposing the coroner chose to hold an inquest on every case of death, whether the result of operation, anæsthetic, or other causes, there could be no valid objection always providing that it was preceded by a post-mortem examination made by a competent pathologist. Indeed, if a post-mortem examination were made in every medical case there would be a likelihood of some interesting discoveries. Of course, the pathologists employed must be the genuine article. If the medical profession declared that a post-mortem examination by a skilled pathologist was the necessary preliminary to every inquest, then it might well leave the coroner and those members of the public concerned to settle when such inquiries should be held. A question of considerable complexity was that of the right and proper practitioner to be called to give evidence, and that could be satisfactorily settled by the coroner receiving an early report from a skilled pathologist which would assist him in choosing the witnesses to be called.

Dr. LOVELL DRAGE gave a detailed account of how the work of a coroner was carried on in country districts and upheld the practice of "viewing the body"; he added, however, that discretionary powers should be vested in the coroner in regard to this point.

Dr. F. J. SMITH contended that a coroner should be a lawyer as well as a medical man, and suggested that either a certificate of death should be given by a medical man after he had viewed the body, such certificate to comprise the full facts of the case and the cause of death, or that he should on a separate form notify the coroner of the death; he (Dr. Smith) also pointed out that for this work the medical man should be paid. Another alteration which he advocated was the holding of a preliminary necropsy by a specialist in pathology.

The discussion was continued by Mr. R. GILL, Dr. J. M. BERNSTEIN, Mr. T. H. KELLOCK, and the PRESIDENT, after which Mr. SPENCER replied.

HARVEIAN SOCIETY OF LONDON.

The Early Diagnosis and Treatment of Cancer of the Stomach.

A DISCUSSION on the above subject was held on March 4th, Dr. CHARLES BUTTAR, the President, being in the chair.

Dr. W. HALE WHITE said that one half of all cases of cancer, as observed in the post-mortem room,[1] commence in the stomach and that 1·5 per cent. of all deaths in hospital die from cancer of the stomach. The cure must be surgical; to render this possible an early diagnosis was imperative. The patient's history was of the greatest importance. Three-fourths of all cases occurred between 40 and 70 years of age. If symptoms of gastric indigestion first appeared after 40 years of age, and if those symptoms were unaffected by ordinary medical treatment after from three to four weeks, organic disease should be strongly suspected and the abdomen should be opened. 9 per cent. of cancers, as observed post mortem, grew from previous simple ulcers; but this figure was probably fallacious, because the carcinomatous growth might completely efface a previous ulcer. Dr. W. T. Mayo had observed about half of the cases of cancer, treated by operation, as arising from simple ulceration. The history of previous ulcers might be fallacious, for the symptoms might be due to a non-ulcerous condition. An early diagnosis might be impossible, for the patient might first seek advice for enlargements due to secondary growths. This was not uncommon in secondary carcinoma of the liver. The commonest symptoms were as follows. Pain, present in 90 per cent. of all cases, was usually constant and not related to food. Weakness was quickly experienced and was more profound than in simple dyspepsia. Loss of appetite was a striking feature in carcinoma but not in dyspepsia. Nausea occurred early. Free hydrochloric acid was diminished in many cases of carcinoma of the stomach. In 10 per cent. of cases it was increased. This was said to occur especially in cases where the carcinoma had developed on the site of a previous ulcer. The objection that the free hydrochloric acid was diminished by a carcinoma occurring anywhere in the body was unimportant, because malignant disease elsewhere was easily recognised by ordinary physical signs. Cases of atrophy of the gastric mucous membrane and chronic gastritis might diminish the free hydrochloric acid, but the diminution in these cases was less marked than in carcinoma. The presence of cancer cells or blood cells should be sought for in centrifugalised washings of the stomach. In from 35 to 40 per cent. of cases of carcinoma the vomit at some time or another contained blood visible to the naked eye. In 60 per cent. of cases the growth occurred at the pylorus and caused obstruction of the pylorus and dilatation of the

[1] This figure refers to cases actually observed in the post-mortem room only. The more obvious cases of cancer—e.g., breast—do not as a rule appear in the post-mortem room.

stomach. Percussion (without artificial distension) and succussion were fallacies as signs; but examination with the x rays with a screen after a bismuth meal was very useful. Delay in the passage of the bismuth through the pylorus could be seen, but the position of the bismuth shadow was not important, because the position of the stomach was very variable. Visible peristaltic contractions were valuable evidence of pyloric obstruction. No medical treatment could cure gastric carcinoma, hence the necessity for an early diagnosis by which the surgeon could remove the growth. Before surgical treatment the liver and the left supraclavicular glands should be examined for secondary growths. Even if the growth could not be removed much relief could be given the patient by a gastro-enterostomy.

Mr. B. G. A. MOYNIHAN said that cases of the stomach when examined in regard to their previous history might be divided into three groups: 1. Cases, generally acute, in which the symptoms appeared suddenly and progressed rapidly; the whole history might be confined within a space of from four to nine months. 2. Cases in which there was a history of one ancient attack and of repeated attacks due undoubtedly to the presence of a chronic gastric ulcer. 3. Cases in which there was no previous history of gastric ulcer; in some of these a condition of "ulcus carcinomatosum" might be found. The acute cases were not seldom ushered in by an attack of severe hæmatemesis, with or without melæna. It was possible that such copious bleeding was dependent upon multiple hæmorrhagic erosions. The importance of a history of repeated attacks of indigestion, alike in their origin, course, and termination, could not be exaggerated. Such attacks were due to a chronic gastric ulcer, which at last became malignant. Cancer of the stomach was, so far as it depended upon a chronic ulcer for its origin, a preventable disorder. It was probable that two-thirds of the whole number of cases might be so classed. The final attack was distinguished from former attacks by its lingering character, its rebellion against the treatment, dietetic and medicinal, which had proved helpful before, and chiefly by the presence of a profound distaste for food, anæmia, and a progressive loss of weight. The chemical examination of the stomach contents was of little or no value in so far as early diagnosis of carcinoma of the stomach was concerned. In the later cases, when a possible diagnosis of malignancy was made on the clinical evidence, the results of repeated chemical analyses of the stomach contents afforded additional evidence of considerable value. Surgical treatment should be advised in all cases of stomach disorder where there was obstruction, stasis, or tumour, and in all cases of chronic ulcer; in this way early cases of carcinoma would be discovered and radical treatment would surely be possible. There were no symptoms and there were no signs which individually or collectively permitted of an assured diagnosis of cancer of the stomach in an early stage. In cases where there was grave suspicion an exploratory operation should be advised. Such operation should be practised to enable a diagnosis to be made in an early stage, not to confirm an almost certain diagnosis in a hopeless stage.

Mr. D'ARCY POWER said his experience had been that hospital cases came for treatment in the late stages, and that private cases were unwilling to be treated for more than indigestion until hæmatemesis or secondary growths occurred. Carcinoma was nearly always secondary to chronic ulceration, developed slowly, and was localised for a considerable time to its point of origin. Secondary growths were unusual and glandular enlargements in the immediate neighbourhood might show no epithelial deposits. He had had no case under the age of 30 years, and the majority of cases were between 50 and 70 years. Both sexes were affected equally. The symptoms were similar to those of chronic ulceration. No reliance could be placed upon the result of a single examination for free hydrochloric acid. Skiagrams after administration of bismuth had proved valuable in a case of advanced carcinoma, but his experience in early cases had shown that skiagrams failed to reveal any thickening of the mucous membrane. An exploratory operation was chiefly to be relied upon. If a thickening was found a part should be removed and examined microscopically by a skilled pathologist whilst the abdomen was open. If the mass proved to be carcinomatous a partial gastrectomy should be performed, together with a posterior gastro-enterostomy, an operation well borne by the patient. Irritation not only led to cancer but increased the rapidity of growth. It was a mistake to allow a chronic ulceration of the stomach to continue indefinitely; a gastro-enterostomy should be performed in such cases and thus produce anatomical rest. Further, in cases of carcinoma where complete removal was impossible a gastro-enterostomy would prevent further irritation.

Dr. H. D. ROLLESTON said that very different pathological and clinical conditions were included under malignant disease of the stomach. Rare cases of diffuse lympho-sarcoma, extending like a sheath along the alimentary canal and possibly of infective origin, were obviously unsuited for the radical treatment of excision. The more ordinary forms of malignant disease fell into two main groups which differed entirely in their clinical symptoms and as regards their possibility of cure by operation. The two groups were: (1) carcinoma of the cardiac end, where the symptoms were mainly constitutional—namely, fever, anæmia, and debility—and suggested tuberculosis or infective endocarditis; and (2) carcinoma of the pylorus, where the symptoms were mainly mechanical. As a sub-division of the second group might be included cases of carcinoma spreading from the pylorus and lesser curvature to the body of the stomach and producing the leather-bottle stomach. In Group I. the growth was rapid, prone to necrose, to invade the left lobe of the liver, and set up diffuse suppuration in the adherent liver, a condition most unsuitable for operative measures. He quoted cases of carcinoma of the cardiac end of the stomach resembling pulmonary tuberculosis. One patient with fever and intestinal hæmorrhage brought up material containing acid-fast bacilli, but the necropsy revealed a gangrenous carcinoma containing acid-fast bacilli and no tuberculosis; the situation of the growth prevented true vomiting. In another case a gangrenous carcinoma produced a subphrenic abscess, which in turn led to a left pleural effusion, which was the most obvious feature during life. In cases of carcinoma of the pyloric end the diagnosis should be made before a tumour was palpable, for metastasis had occurred in many cases by this time. In a patient with symptoms strongly suggesting gastric carcinoma in whom a test meal showed an absence of hydrochloric acid in the gastric juice exploratory laparotomy was justified to settle the question in the absence of tumour. It was important when such an exploratory operation was undertaken that the surgeon should, in the event of carcinoma being found without obvious metastasis, proceed to partial excision of the stomach and not rest content with gastro-enterostomy.

Mr. V. WARREN LOW said that he had yet to learn how to make an early diagnosis in cancer of the stomach. He thought that a careful analysis of the symptoms, such as pain, increasing ill-health, &c., left a considerable degree of uncertainty in the individual case, especially in the class of case where the patient had suffered from stomach symptoms all his life. It was in everyone's knowledge that cases constantly occurred where even the most experienced surgeons had been deceived at an operation by the similarity of an old ulcer to a malignant growth. He quoted a case in which in 1898 an anterior gastro-enterostomy was performed at St. Mary's Hospital for what appeared to everyone to have been a hopeless case of stomach cancer. This patient was alive and well two or three years ago. As far as his experience had gone he had learnt to rely very largely on the expert examination of the stomach contents.

Dr. ARTHUR F. HERTZ attached great importance to two recent methods of examination in the early diagnosis of cancer of the stomach—namely, occult blood in the fæces and skiagraphy. Hæmorrhage from a gastric growth was rarely sufficient to give rise to obvious melæna, and blood was visible in the vomit in less than 40 per cent. of cases. Minute hæmorrhages were constantly occurring from the surface of every malignant ulcer, so that a small quantity of blood was constantly excreted in the fæces. Ewald first utilised this fact for diagnosis. Chemical tests were more satisfactory than microscopical or spectroscopic; the best were the guaiacum and the benzidene reactions made with ethereal extracts of stools after treatment with glacial acetic acid. Meat diet should be avoided for a few days prior to the first examination. Out of 266 recorded cases 92 per cent. gave a positive reaction. In no single case of gastritis, nervous dyspepsia, or pernicious anæmia had the test for occult

blood in the stools been positive. In simple gastric or duodenal ulcer blood might be present in the stools but it always disappeared in two or three days under dietetic treatment. His experience with skiagraphy showed that information about the size of the stomach and the rate with which it got rid of its contents was not so reliable as that obtained by certain other methods of examination. Inflation of the stomach by carbon dioxide, produced by action of tartaric acid on sodium bicarbonate, gave constant results in sound individuals. Very slight dilatations could be readily recognised by this method. Traces of bismuth might remain in the stomach six hours after a bismuth meal sufficient to cause a shadow to x rays and no evidence of pyloric obstruction was thus obtained. Traces of food residue, obtained by a tube at 8 A.M. after the last meal had been taken at 8 P.M., afforded almost conclusive evidence of organic stricture of the pylorus. After a bismuth breakfast x rays might show: (1) obstruction at the cardiac end of the stomach due to growth in this situation; (2) abnormality in the outline of the stomach caused by a projection of a growth into the lumen; and (3) obliteration of the pyloric vestibule due to growth near the pylorus.

Mr. T. CRISP ENGLISH said that the important early signs of cancer of the stomach should be given a more prominent place in text-books on medicine and surgery. Too much space was usually devoted to the classical signs, and patients suffering from the classical signs were usually in a hopeless condition. He referred to the difficulty which sometimes occurred during an operation in diagnosing a chronic ulcer from cancer, even after careful inspection through an opening in the stomach. If the possibility of a radical operation arose the diagnosis must first be certain; his own practice in such cases had been to excise a portion of the diseased area for microscopical examination and then to do a gastro-jejunostomy. If the excised portion proved malignant, a partial gastrectomy was performed later. He urged the more frequent performance of partial gastrectomy in preference to the palliative operation of gastro-jejunostomy.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

Tropical Disease in the Philippine Islands.—Malta Fever.

A MEETING of this society was held on March 19th, Sir PATRICK MANSON, the President, being in the chair.

Captain C. F. CRAIG, of the Medical Corps, U.S. Army, communicated a paper on the Observations of the United States Army Board for the Study of Tropical Diseases in the Philippine Islands, giving the results of research work upon tropical diseases in those islands accomplished by that Board from March, 1906, to July, 1907. Filaria (microfilaria) Philippinensis was a special species of filaria indigenous to the islands; filaria Bancrofti, however, was the most common filaria observed. In the Philippine Islands a very large proportion of white men were infected with entamœba coli and such infection as far as the Board had been able to observe did not result in symptoms of diarrhœa or dysentery. The conclusions in regard to dengue fever were: (1) there did not occur in the blood of dengue patients any visible organism which could be considered as the cause of the disease; (2) dengue was not accompanied by anæmia; (3) it was characterised by a leucopena; and (4) it was not a contagious disease and patients suffering from it might be placed in the general wards of a hospital without fear of infecting other patients provided precautions were taken against the bites of mosquitoes. Concerning the etiology of frambœsia or yaws and the experimental production of this disease in monkeys, the Board considered that treponema pertenuis was the cause of yaws; it was also concluded that this organism and treponema pallidum might be differentiated by the results obtained from the inoculation of monkeys and that yaws and syphilis were distinct diseases.—Dr. G. C. LOW did not agree with the conclusions of Captain Craig in regard to filaria Philippinensis.—Dr. F. M. SANDWITH said that the paper added dengue fever to the list of diseases to which man was liable from the bite of the mosquito.—Mr. E. E. AUSTIN said that in addition to the mosquito the insect known as phlebotomus papatasii must be recognised as causing disease; this was a small hairy midge, a kind of sandfly of a yellowish-brown colour; the females inflicted bites and only at night, causing a disease known as papatasii fever, the results of which were calculated at one time to have incapacitated a large number of the Austrian troops in Bosnia.—The PRESIDENT said that the views put forward by Captain Craig in regard to entamœba coli could not be fully accepted in face of the opposite opinions expressed in the leading American medical journals.

Dr. LOW read notes of a case of Malta Fever from Northern Nigeria and pointed out that Malta fever had long been known to exist in other parts of the world than the Mediterranean; cases had recently been reported from India, South Africa, and the Soudan.—Mr. H. A. FOY (Lokoja) gave details of another case of Malta fever from Northern Nigeria, and the PRESIDENT discussed the use of Widal's reaction in connexion with the diagnosis of this disease.—Kaiserling's Universal Projection Apparatus was used for illustrating the specimens mentioned in the discussion.

EDINBURGH OBSTETRICAL SOCIETY.

The Porro Uterus.—Renal Decapsulation in Eclampsia.

A MEETING of this society was held on March 10th, Professor WILLIAM STEPHENSON (Aberdeen), the President, being in the chair.

Dr. D. BERRY HART read a paper on the Interpretation of the Porro Uterus in Relation to the Mechanism of the Third Stage of Labour. He pointed out that the Porro uterus, as was long ago stated by Sänger and Champneys, was an over-retracted uterus, and really demonstrated that shrinkage of the placental site did not separate the placenta. The conditions found in third stage uteri obtained post mortem were quite different. Where the placenta was unseparated the uterine wall was only half an inch in thickness as compared with a thickness of one and a half inches in Porro specimens. He contended that the separation in the third stage occurred after the pain, when the uterus slightly expanded, and thus a disproportion between the placenta and its site was obtained. This expansion was due mainly to the recoil and the elastic tissue between the bundles of muscle and especially below the thin subperitoneal layer of muscle. By Weigert's stain he had found the elastic tissue well developed in these positions. The important point in separation was the disproportion between the placental site and the placenta and this was obtained early in placenta prævia, and after the pain in the normal third stage. This tore through the microscopical filaments in the spongy layer and then the uterus easily expelled the mass of placenta and membranes.

Professor Sir J. HALLIDAY CROOM related a case of Renal Decapsulation in Eclampsia with an illustrative successful case. The patient was a primipara, aged 26 years, with no history of any previous renal disease. She was delivered of a healthy child in the Royal Maternity Hospital, Edinburgh, after a protracted labour, the child having presented by the face. This was followed by a succession of fits with intervals of maniacal excitement which later gave place to profound and increasing coma. The patient was treated with hot packs, thyroid, croton oil, venesection, and saline infusion. The skin and the bowels acted freely, the kidneys were acting well, yet she was hourly becoming more intoxicated and comatose. The urine contained a large amount of albumin, diminished urea, and granular and hyaline casts. It was determined as a last resource to decapsulate the kidneys. At the operation the right kidney was found to be congested and enlarged, the capsule being slightly thickened and slightly adherent, and the left kidney appeared to be quite normal. There was copious hæmorrhage from the perirenal fat, especially on the right side. Within 24 hours after the operation the patient passed 90 ounces of urine with a great diminution of albumin and an increased quantity of urea. For several days the quantity of urine continued excessive. The albumin disappeared within two days of the operation and the patient made a good recovery. Sir Halliday Croom proceeded to trace the history of the operation of decapsulation of the kidneys and mentioned 26 cases which he had collected from the literature of the subject in which the operation had been undertaken for eclampsia. He believed that the operation exerted a beneficial action by relieving the tension in a congested kidney and by depleting the organ by localised blood-letting. In this way the circulation through

the kidney was re-established and the elimination of the toxin was aided. He did not agree with Pinard that it should be entirely restricted to those cases in which there was complete anuria, but he considered that it should only be done post partum. If done before delivery one of the most efficient means of treating eclampsia—namely, emptying the uterus—would be left untried, and he was of the opinion that decapsulation of the kidneys should be looked upon as a last resource. The most complete indication for the operation would be a case in which the eclampsia continued or originated after labour and in which there was anuria. The operation did not take long to perform and caused but little shock.

Dr. H. OLIPHANT NICHOLSON read a paper on the Physiological Basis for Decapsulation of the Kidney in Eclamptic Anuria. He considered the question of the complete or nearly complete suppression of urine which was invariably present in eclampsia. Rational treatment turned upon elucidating the cause of the arrest in the secretion of urine. It was found to be due to a profound alteration in the circulation of the blood through the kidneys. Some toxin, possessing powerful vaso-constricting properties, contracted the arteries of the body generally and the smaller branches, and to such an extent as even to arrest the flow of blood through the kidney. The blood pressure in the renal glomeruli fell to a very low level and the secretion of urine became greatly diminished. It was the height of the blood pressure in the glomeruli that determined the amount of urine secreted, the height of the blood pressure elsewhere counted for nothing. The brachial blood pressure in eclampsia was always enormously high and was at its highest when there was no secretion of urine at all. As the result of arterial blood being cut off from the kidney in this way the renal veins became greatly congested, the pressure in them was raised, and albumin appeared in the urine. The treatment of such a condition was to dilate the renal arteries by giving vaso-dilating drugs and to lower the pressure in the veins. This latter was difficult and took time; as by very free purgation, dry cupping the loins, and bleeding from a large venous trunk. But in a grave case with complete anuria the quickest and most effective method was to expose the kidney and to draw off blood *directly* from the venous plexuses of the organ. This heroic treatment might consist of something less than complete decapsulation.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

Prognosis in Valvular Disease of the Heart.

A MEETING of this section was held on Feb. 26th, Dr. W. G. SMITH, the President, being in the chair.

Sir JOHN F. H. BROADBENT opened a discussion on the Prognosis in Valvular Disease of the Heart. He emphasised the importance to the patient of a reliable prognosis and briefly alluded to the more obvious factors to be considered in its determination, such as age, occupation, and family history. He noted the beneficial effects of hypertrophy and the adaptation of the vascular system to the output of the heart. The following list represented the order of gravity of the various forms of valvular disease: (1) Aortic incompetence due to late (e.g., atheromatous) changes; (2) aortic incompetence due to acute changes; (3) mitral stenosis; (4) aortic stenosis; and (5) mitral incompetence due to endocarditis. In any of these the prognosis was, of course, graver if the myocardium were inflamed as well as the endocardium, or if the patient were allowed about too soon, or if the patient were past the age of adolescence when affected, for after this age but little hypertrophy of the cardiac muscle could be expected. In aortic incompetence due to endocarditis the lesion was unlikely to get worse, but in the aortic incompetence due to later life changes it did get worse. The chief symptoms were pallor, faintness, and angina; these, the size of the vessel, and the character of the murmurs and heart sounds were important. If the murmur were loud and long the leak could not be great and the heart was vigorous. It should be looked on as a favourable element in the case if the second sound were not wholly replaced by a murmur but were present in some degree. In aortic stenosis the degree of obstruction could be measured by the size of the artery and the hypertrophy of the left ventricle. The supervention of stenosis on aortic incompetence was in some ways beneficial, but it undoubtedly threw more work on the left ventricle. In mitral stenosis there was a tendency for the condition to progress. It was a disease of early life, and the fibrous condition occurring in the valve prevented an increase in its size relative to the development of the ventricle. The structural changes in the heart were a fallacious guide. The left ventricle, which usually got smaller, might, owing to a primary myocarditis, be dilated and hypertrophied. The size of the radial artery was some help. Dropsy was a late sign and high pressure in the pulmonary circulation was ominous. When the right ventricle failed there was regurgitation as well as stenosis; this led to cyanosis, dyspnœa, and infarction of the lungs, the last due, in the speaker's opinion, to thrombosis of the pulmonary vessels and not to the lodgment of emboli in the arterial branches. The auscultatory phenomena in mitral stenosis might be thus classified: (1) presystolic murmur, loud first sound, second sound reduplicated, systole short; (2) second sound not audible at apex, this showing great stenosis and too little blood in aorta; and (3) rhythm irregular, systolic murmur with or without first sound, and no presystolic murmur owing to right ventricle failure.

The PRESIDENT said that the essential points in the prognosis of valvular disease of the heart had been laid down 60 years ago by Dr. Stokes. He did not think the classification of the relative danger of valvular lesions a very profitable subject for discussion and very diverse classifications had been proposed. It was quite plain that in actual practice they judged of their prognosis largely by the observation whether the patient responded to treatment or not. He was incredulous of the possibility of determining slight variations in the volume of the heart by percussion. All the rules of prognosis would never account for some of the cases of sudden death. Prognosis depended on an unknown factor—the vital condition of the heart muscle—and the less they could find out about the patient the more dangerous was the outlook.

Sir CHRISTOPHER NIXON said they must bear in mind that prognosis was so inextricably mixed up with all the phenomena of the circulation that it was only by studying those phenomena as a whole that they could make any attempt to form an opinion as to the future of any individual case. They might make a diagnosis without a prognosis, but they could not make a prognosis without a diagnosis. That was why every available symptom and sign must be utilised, hence he should not like to identify himself with paying too slight respect to the ancient method of percussion. It was probably the least reliable of all methods of investigation, but in very many cases both the superficial and deep area of percussion gave valuable evidence as to the size of the organ. They had been in the habit of attaching too much importance to the existence of a murmur in prognosis, and probably they were inclined to multiply those murmurs to too great an extent. Their distinctions with regard to some of them were no doubt artificial, cumbrous, and without practical use. The main fact which they had to determine was the reserve force of the heart, and they must bear in mind how much that reserve force varied in individuals. It differed much within the limits of health, and how much more must it differ in cases of cardiac disease. To his mind the principles laid down in Mackenzie's work on diseases of the heart afforded the best direction for future investigations, especially in prognosis. The speaker said that he adopted Sir John Broadbent's order of cardiac lesions. He then proceeded to discuss the prognosis in the various forms of valvular lesion, dwelling especially on the auscultatory phenomena. He considered that the form of aortic incompetence due to aortic patency was most likely to lead to sudden death. In conclusion, he said that he would be inclined to put the cases under three classes: 1. The obvious case—the case of failing compensation in aortic patency; the case of aortic atheroma with the Stokes-Adams syndrome; the case of mitral obstruction, with the nodal rhythm and the changes set up as a result of tricuspid regurgitation. In all such cases they would give a bad prognosis. 2. Cases of recurrent valvular disease—cases in which the dropsy and other urgent symptoms subsided, and the patient was able to resume his work as usual; their estimate of the patient's length of life would be merely a

guess. 3. In cases rheumatic in origin, and under conditions of life that were not favourable to the existence of cardiac disease they might fairly give the answer "I don't know" to the question "How long am I likely to live?"

Dr. J. M. FINNY said that the great point to bear in mind in dealing with the question of prognosis was the condition of the heart muscle. The character of the sounds was of less importance than seeing whether the heart was doing its work and had some reserve beyond it. He did not think an opinion was justified without considering the matter of treatment.

Sir JOHN BROADBENT, in reply, said that they could not get much information as to the left ventricle by percussion: its chief value was in acute myocardial changes. He thought that Mackenzie had thrown a great deal of light on disorders of rhythm, but he was not prepared to admit all about the myogenic theory, which had become a sort of fetish and was quoted to explain all the final stages in cardiac breakdown. A case had been published of a child with sarcoma of the heart. The whole of the right auricle and ventricle was a mass of new growth. There was no conceivable possibility of contraction. The whole circulation was maintained by the left ventricle and all through there was no irregularity of rhythm. That absolutely demolished the myogenic theory.

SECTION OF OBSTETRICS.

Exhibition of Specimens.

A meeting of this section was held on March 5th, Dr. E. HASTINGS TWEEDY, the President, being in the chair.

Dr. ALFRED SMITH exhibited a large Fibro-cystic Myomatous Uterus taken from a patient, aged 38 years, who informed him that she never felt any inconvenience up to some months before her admission to hospital, when she noticed that she was getting rather stout. She was sent to him with a provisional diagnosis of ovarian cyst, and the clinical features were identical with the phenomena obtained in that condition. On opening the abdomen he thought that he had to deal with an ovarian cyst, but to his astonishment he found a fibro-myoma which had undergone the degeneration seen in the specimen, giving a uniform pearly whiteness. Dr. Smith also exhibited a Uterus with Large Cyst of Gaertner's Duct attached. Twelve years previously he removed what was called an ovarian cystoma from the other side of the patient. She afterwards complained of another enlargement. He opened to remove the cyst and found that when he was dissecting it out from the broad ligament it seemed to extend right down into the vagina. When he separated it as far as he could he found that the uterus had no support, and he removed it along with the cyst.

The PRESIDENT read the obstetrical and gynæcological reports of the Rotunda Hospital.—On the proposal of Dr. SMITH, seconded by Dr. T. NEILL, the discussion of the report was postponed until the next meeting of the section.

BRITISH BALNEOLOGICAL AND CLIMATOLOGICAL SOCIETY.

A meeting of this society was held on March 10th, Dr. E. Solly (Harrogate), the President, being in the chair.—The discussion on Dr. C. W. Buckley's paper, "Intestinal Lavage on the Plombières System,"[1] was reopened by Dr. A. Mantle (Harrogate) with a short paper on Intestinal Lavage, in which he pointed out that mucous colitis, which was the most common condition for which this treatment was applied, was frequently overlooked and wrongly diagnosed. The patient not uncommonly consulted the doctor for worms, and was sometimes thus treated on this diagnosis. There must be no under-rating the diagnostic value of mucus when seen in the stools. Whether its presence always meant auto-intoxication was questionable, and he was inclined to believe with Hertz that without abrasion or ulceration of the mucous membrane no symptoms took place provided there was a good hepatic and nephric defence and a sound nervous system. Nervous manifestations were usually striking, and it was difficult to say how much as a result, and how much as a cause, of the colitis; and with the disturbed nervous system there was an unbalanced circulation—with too little blood in the periphery and too much in the splanchnic area—hence a condition favourable to congestion of the whole alimentary canal. This explained the frequency of gastric symptoms and of gastric dilatation in chronic cases of colitis. Speaking as one with a large experience of intestinal lavage, there could be no doubt as to its value in colitis, and, combined with the immersion bath which reopened the peripheral circulation, the results were brilliant.—Mr. J. P. Lockhart Mummery then read a paper on the Treatment of Severe Cases of Chronic Colitis. He said that there were many cases of chronic colitis which did not get better as the result of lavage of the bowel or medical treatment. In most of these cases there was some lesion, obstructive or otherwise, in the colon which was the cause of the condition and which must be removed before the patient could get rid of the symptoms. He particularly insisted upon a careful examination, aided by sigmoidoscopy, in all cases of chronic colitis. Operation was clearly indicated where there was a localised obstructive lesion in the colon, and also in many of the chronic cases where medical treatment failed to cure the condition after a thorough trial. The nature of the operation must depend upon the conditions present. Appendicostomy gave excellent results in suitable cases and was much to be preferred to cæcostomy. Correct diagnosis as to the cause of the condition was, however, the first essential.—Dr. R. Fortescue Fox said that serious disorders of the colon were quite exceptional in health resort practice, whilst conditions of constipation with more or less colon irritation were extremely common. The term "muco-membranous colitis" applied to such cases was a misnomer. He deprecated the tendency to affix a label without real diagnosis, and set up special health resorts with special treatment and special practitioners to deal with a supposed disease. Cases of colon disorder offered no real difficulty of diagnosis to the physician.—Dr. F. Parkes Weber thought that delayed circulation in the bowel connected with want of exercise and constipation played a very important part in the commencement of chronic colitis.—Dr. Leonard Williams deprecated the new-born enthusiasm for the Plombières douche at the British health resorts. Colitis was not a new disease, nor was the Plombières douche a new method of treatment.—Mr. H. S. Pendlebury discussed the surgical points raised by Mr. Mummery's paper.—Dr. Preston King (Bath) pleaded for moderation in the use of this treatment.—Dr. A. F. Hertz said that constipation, whether produced by neurasthenia, chronic appendicitis, or the weak abdominal muscles which make defæcation inefficient in visceroptosis, was the chief cause of colitis. Treatment consisted in keeping the bowels empty. Diet, exercises, and drugs generally sufficed; sometimes enemata, and especially the Plombières douche, were required.—Dr. T. Pagan Lowe (Bath) endorsed what had been said by Dr. Leonard Williams.—Mr. A. E. E. Reboul (Châtel Guyon) described the treatment as carried out at C^t^ âtel Guyon.—Dr. Bergouignan (Evian) also described the treatment.—Dr. Buckley, in reply, said that his paper had dealt, not with the treatment of chronic colitis, but rather with intestinal lavage as a method of removing toxic substances from the bowel and setting up conditions unfavourable to the growth of injurious saprophytes. The method had not been used sufficiently in this country as yet to justify sweeping commendation or condemnation, but had at least earned the right to be carefully considered as a valuable adjunct to our present methods of dealing with diseases arising from intestinal auto-intoxication.—Dr. Mantle briefly replied, and said he quite agreed with Dr. Parkes Weber as to there being a failure in the circulation of the colon. He had for a long time pointed out that there was an unbalanced circulation in these cases. There could be no doubt of the benefit of exercise and massage in these cases.

[1] THE LANCET, Jan. 30th, 1909, p. 323.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

At a meeting of this society held at Sheffield on March 19th, Dr. J. W. Martin (Sheffield), the President, being in the chair, a vote of condolence to the family of the late Dr. J. H. Keeling, an original member of the society, was proposed by Dr. D. Lloyd Roberts, seconded by Mr. R. Favell, supported by the President, and carried.—Mr. Favell showed a specimen of Hydrosalpinx.—Dr. A. J. Wallace (Liverpool) showed a Glass Vaginal Nozzle, which he had removed from the bladder by the vaginal route. The nozzle was five and three-quarter inches in length and three-eighths of an inch in diameter. It had slipped into the bladder seven weeks previously during the process of

vulval douching by a nurse of a recently confined woman.—Mr. Arthur M. Connell (Sheffield) described a case and showed the specimen of Complete Torsion of the Internal Genitalia with a Large Interstitial Fibroid. The patient, a spinster, aged 50 years, had suffered on several occasions during the previous five weeks from subacute attacks of abdominal pain and vomiting, which had always commenced during defæcation. Her medical attendant had found an abdominal tumour of about the size of a six months' pregnant uterus. The last attack was the most severe and had lasted three days when Mr. Connell first saw her. She was then desperately ill. He diagnosed a fibroid with torsion of its pedicle and advised immediate operation. The uterus and its appendages were rapidly removed, after a preliminary enucleation of the large interstitial myoma. The uterine and ovarian vessels were thrombosed and did not require ligaturing. The patient made a good recovery, though a transient hemiplegia commenced on the day after operation. The cavity of the uterus was distended with blood clot and the uterus, with its appendages and the tumour, were in a state of infarction. Mr. Connell also showed a Portion of the Pelvic Colon successfully Resected on account of its Dense Adhesions to a Pyosalpinx.—Mr. A. W. Cuff (Sheffield) showed the macroscopical and microscopical specimens from a case of Bilateral Malignant Papillary Cysto-adenoma of the Ovaries. There was considerable ascites and the peritoneum was studded with papillary growths. Three months after operation there were no signs of recurrence.—Dr. Lloyd Roberts read the notes and showed the specimen of a case of Carcinoma of the Corpus Uteri successfully removed per vaginam from a multipara, aged 58 years.—Dr. J. E. Gemmell (Liverpool) read a short paper on Fibro-myoma Uteri as a Cause of Puerperal Toxæmia. He related three cases which illustrated different methods of puerperal infection dependent upon such growths: (1) strangulation of the pedicle leading to sloughing and general septic peritonitis; (2) toxæmia from necrosis of the growth itself; and (3) sapræmic infection from the placental site, together with necrosis of the growth. The first two cases were successfully treated by subtotal hysterectomy. In the third case a sloughing submucous fibroid was removed piecemeal on the sixth day of the puerperium. Immediate improvement followed, but death from pulmonary embolism occurred a few days later. He advocated, in the absence of symptoms of toxæmia, that the tumour should be left until involution is completed and then dealt with by any operative method which is deemed most suitable; but when toxæmia arises, from any cause whatever, complete or subtotal hysterectomy is the operation of choice and the safest.

MANCHESTER PATHOLOGICAL SOCIETY.—A meeting of this society was held on March 10th, Dr. W. Milligan, the President, being in the chair.—Dr. A. T. Wilkinson described a case of Acute Hodgkin's Disease. The patient was a man aged 28 years. The illness began early in September, 1908, with fever, some vomiting and diarrhœa, and slight delirium. After four weeks he had recovered sufficiently to go away for a holiday, but a week later the illness recurred with more severe symptoms and enlargement of the glands of the neck. There was marked anæmia. He spent the last week of his life in the Manchester Royal Infirmary (Dec. 15th to 22nd) in a typhoid state with a continuous temperature of from 101° to 103·4° F., pulse 120 to 150, and respirations 40 to 50. There was a chain of glands behind the sterno-mastoid and the glands under the lower jaw were enlarged on both sides. The spleen and liver were palpable. There was some abdominal discomfort with diarrhœa. Widal reaction negative. Blood count: red cells, 4,432,000; white cells, 8000; hæmoglobin, 58 per cent.; marked polychromatophilia. The post-mortem appearances were described by Professor J. Lorrain Smith. The case showed a moderately soft and partly necrotic tissue replacing the lymph glands, affecting (*a*) the cœliac group, and forming a large tumour-like mass in and behind the smaller curvature of the stomach; (*b*) the glands along the aorta throughout its entire length; (*c*) the glands of the neck; and (*d*) the glands of the groin. The enlargement of the cœliac glands was the most conspicuous change. There was very slight enlargement of the mesenteric glands. The liver was studded with minute white rounded masses of tissue of the diameter of a small pea. Amongst these were a number of larger masses up to the size of a walnut and one or two of them showed umbilication. The white tissue formed in definite masses closely simulated deposits of malignant new growth. The spleen was moderately enlarged and studded with large nodules closely resembling tumours of secondary origin. The lungs, heart, kidneys, stomach, and intestine were not affected. The microscopical examination of the new tissue showed the characteristic proliferation of large endothelial cells, but there were very few giant cells and eosinophile cells.—Dr. Eugene Yonge gave a communication on the Association of Deformities of the Jaws with Nasal Obstruction in Children, in which he referred to some of the difficulties which existed in connexion with the usual theory that mouth breathing, due generally to the presence of adenoids, was the cause of the deformities.—Dr. R. W. Marsden mentioned two cases of Calcareous Degeneration of the Middle Coats of the Medium-sized Arteries. In both instances the degeneration had reached a high degree, the men being of the poorer class, aged 49 and 67 years, and suffering from pulmonary tuberculosis. Attention was drawn to the distribution of the disease, the arteries of the limbs being chiefly affected. In one case the small vessels of the hands and feet were healthy, but in the other both palmar and plantar arches were affected. In both cases the cerebral vessels were practically free from degeneration. Dr. Marsden suggested that the particular form of the toxin producing the affection might play an important part in the peculiarity of distribution.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 17th, Dr. P. Boobbyer, the President, being in the chair.—Dr. A. Stanley Green (Lincoln) showed a series of lantern slides and photographic prints illustrating the value of Roentgen examination in some conditions of diseased bone. Amongst the examples shown were instances of osteitis due to injury, tubercle, syphilis, &c., besides Charcot's disease of the joints, rachitic changes, and several cases of sarcoma in close relation to bones. A most instructive case was related and illustrated in which an examination of the foot by Roentgen rays showed the scaphoid bone to be the seat of two abscesses. Guided by this the surgeon was able to reach both abscesses through a single opening drilled in the bone without implicating in any way the neighbouring joints.—Dr. R. B. Purves (Lincoln) read a paper entitled "Notes on Some Cases of Gall-stones." In the first case alluded to 273 stones were removed by him at an operation and the gall-bladder was of an hour-glass shape as the result of omental adhesions. This patient always seemed better when following Dr. A. Haig's diet and relapsed if it was not adhered to. In a second case four large stones were found in the common duct, but jaundice only appeared at quite a late stage, three weeks before operation. A third case illustrated the fact that gall-stones gave rise to indigestion and vague pains after meals. Besides jaundice and tenderness there were referred pains and marked wasting in this case. At the operation the hepatic, cystic, and common ducts were all full of stones. A fourth case, in a man, 50 years of age, with a history extending over several years, was specially interesting, as hæmatemesis occurred after the operation and retinal hæmorrhages. Despite these complications he recovered. In discussing this hæmatemesis Dr. Purves argued that its real cause was almost certainly of an infective septic nature, and also laid stress on the symptom of pain referred to the post-hepatic region in gall-stone cases. Such cases were distinguished from lumbago by the pain being confined to this level on the right side.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—A pathological meeting of this society was held on March 12th, Dr. W. H. Cheetham being in the chair.—Dr. O. C. Gruner read a paper on the Morbid Histology of the Suprarenal Gland, with lantern demonstration.—Dr. A. S. F. Grünbaum made some remarks on the various methods of Serum Diagnosis of Syphilis and the principles underlying them. He demonstrated Sachs's modification of Wassermann's method by the use of a lecithin-oleic acid mixture in the place of the extract of syphilitic liver. He also showed living spirochætæ with the aid of dark-ground illumination.—Dr. de Burgh Birch demonstrated the Effects of Chloroform on the Mammalian Heart. He showed: (1) a cat's heart beating under perfusion with Locke's Ringer fluid (with glucose) which was three times arrested (with 1 in 2000 chloroform solution) and restored with Locke's Ringer fluid

and (2) a rabbit's heart perfused with Locke's Ringer fluid treated the same as the cat's heart, was then well washed free of chloroform at 11.30 A.M. on March 10th, and was exposed in a covered vessel to external temperature. (The snow was lying on the ground.) The treatment was repeated with revival on March 11th and 12th at the same time, and finally at 8.30 P.M. on the 12th the auricles alone were active, a total time of 57 hours after excision.—Dr. J. B. Hellier showed a specimen of Cyclocephalus in which the nose was completely wanting, and there was one single orbital cavity containing an eyeball with double cornea.—Pathological and microscopical specimens were shown by Mr. R. Lawford Knaggs, Dr. Gruner, Dr. M. Coplans, Mr. W. R. Bates, Dr. E. Allen Wilson, Mr. B. G. A. Moynihan, Mr. Walter Thompson, Dr. A. L. Whitehead, Mr. H. Collinson, Dr. G. A. C. Mitchell, Mr. W. Gough, Dr. T. Wardrop Griffith, Dr. J. Kay Jamieson, and Mr. J. F. Dobson.

Reviews and Notices of Books.

The Body at Work: A Treatise on the Principles of Physiology. By ALEX HILL, M.A., M.D. Cantab., F.R.C.S. Eng., sometime Master of Downing College, Cambridge. With illustrations. London: Edward Arnold. 1908. Pp. 440. Price 16*s.* net.

LET the author state his object: "I have endeavoured to describe the phenomena of life, and the principal conclusions which have been drawn as to their interdependence and as to their causes, in language which will be understood by persons unacquainted with the sciences on which physiology is based." That is the point—will persons unacquainted with these sciences really understand all that is so admirably set forth in "The Body at Work"? If they do not it will not be for want of graphic description and occasionally quaint and apt comparisons. The fault will lie probably in the intricacy of the subject and the many factors that go to prepare the mind for the study of recondite biological processes which involve a knowledge of the structure of organisms both as revealed to the eye and by means of the microscope, and also in part from the want of some knowledge of fundamental chemical reactions as manifested in organic compounds.

After a short introductory, defining chapter, the following subjects are dealt with: the basis of life, the unit of structure, fluids of the body, internal secretions, digestion, respiration, excretion, circulation, muscle, nervous system, smell, taste, vision, hearing, skin sensations, voice, and speech. The book itself neither aims at being an introduction to the systematic study of physiology nor poses as an aid in the preparation for professional examinations. The more recondite and more suggestive results of recent research have been treated with some thoroughness.

Protoplasm as the basis of life is considered, and the author regards the term "physical basis" used by Huxley "as too hard a term for this elusive concept of the matter which exhibits life—with its power of holding water and its tendency to assume architectural form. A short but sprightly account of the irritability, chemical activity, fermentations, respiration, and the capacity of growing as manifested by protoplasm leads the reader to the conclusion "that no evidence which will bear sifting has, as yet, been adduced in support of the thesis, that living cells contain something which dead cells do not contain." The leucocytes are undifferentiated cells, "the maids-of-all-work." The general reader is early introduced to "antikinase" and pancreatic juice and the activity of trypsin. Through the "unit of structure"—the cell—the reader is led onwards to the question of division of labour amongst the cell units, "the body being regarded as a republic in which every citizen develops to the highest degree the capacity of doing the thing which his situation makes it desirable for him to do." On p. 39 it would be more accurate to say that lymph contains everything which "blood-plasma" contains, not "blood," as stated. The following phrase is picturesque: "Lymph occupies streets, market-place, passages, corridors." It brings home the idea of this all-pervading medium in our tissues. The general reader may know about "dropsy," but we are not so sure as to his conception of cirrhosis and ascites, catechin, a benzoic alcohol, proteoses, megacaryocytes, hæmophilia (the word "bleeder" is not used), and phosphaturia, to take a few instances at random from the early pages. The tonsils are characterised as "barracks crowded with leucocytes which guard the pass into the alimentary canal." Perhaps this sentence (p. 79) might be amended: "The capsule—i.e., the spleen—and the red pulp are largely composed of muscle fibres." We do not think that the spleen enclosed in an air-tight box and connected with a bent column of mercury to make a pressure-gauge would show the phenomena of variation in volume, pulse, and respiratory undulations that are obtained with an air oncometer.

The ancient history of the thyroid gland is given pretty fully, while Dr. Gaskell's theory is said to involve "a transformation so fantastic that it would provoke a smile of incredulity were we to set it forth without a prologue far more lengthy than our space permits." Yet Dr. Gaskell may be right, so that it would have been perhaps better not to have mentioned the theory. The anatomical arrangements of the alimentary canal are carefully described. Throughout few names of investigators are mentioned, not for want of appreciation of the genius of the workers—so we do not find those of Pawlow and of Dr. Beaumont and his classical researches on Alexis St. Martin. The following gives an example of the author's racy style: "My lord the stomach! ..... He is offended if food be not offered with all the circumstance and ceremony which becomes his rank. ..... He responds most generously when prolonged mastication assures him that he may trust to receiving the food in a sufficiently subdivided state. ..... Never content with lip-service, he exacts the labour of teeth and tongue and palate" (p. 113).

The pancreatic juice is described as containing organic substance amounting to 10 per cent. The juice obtained by the action of "secretin" contains much less solids, from 2 to 3·5 per cent. We do not find a reference here to the kinase which activates trypsinogen, nor to the action of bile on pancreatic ferments. "The Story of a Meal"—i.e., a mixed meal consisting of bread, vegetables, cane sugar, meat, milk fat, and cheese—is described in a most interesting manner and its practical bearings on mastication and other matters are indicated. Each villus, no doubt, is a little pump, but it contains more than "one or two plain muscle fibres, which are disposed in the direction of its long axis." In dealing with diets and dietetics the author sometimes uses grammes and on other occasions pounds or ounces (p. 151), and he regards the human race as evolved from the more enterprising and energetic troglodyte hunters.

The pulse and sphygmograph and dicrotism are described, but we failed to find an account of the normal number of heart beats at different ages, for example, and in this section the author was a little hampered as to what he should include and how deep he should go. We pass over muscle and heat production and the story of the knee-jerk and refer to the nervous system and the sense organs which occupy more than one-fourth of the whole book. This section is treated in a broad and attractive manner, and it is shown how many vital processes are dependent on nervous control, while its unifying and integrative importance are daily becoming more manifest. The theory of the neurons is set forth—their characters, functions, development,

synapses, linkage or chains, and "life-long existence" are all elucidated and woven into the story of nervous activity and coördination as receptors, transmitters, and effectors. The general reader will be much interested in the author's view of pain and with the means and channels of communicating messages through the spinal cord and other parts of the central nervous system. Pain, according to the author, "is not a set of sensations, but a condition of the central nervous system which renders it unduly exaltable or excitable in a peculiar manner to impulses which have the same local origin as the nerve current which sets up the condition of pain" (pp. 312 and 425). The author's wide knowledge of anatomy, human and comparative, enables him to weave into the story much that is highly suggestive, more especially in connexion with the comparison of the brain of mammals and the location of sensory areas, and the structure and development of the sense organs themselves. The discussion of "speech" leads to the "association areas," and this is followed by an interesting exposition on memory, skilled movements, man's "inherited brain pattern," mental images, hallucinations, and dreams. Epigrammatic little summaries are frequent here from Dr. Hill's pen; here is such a one:—"A remembered dream is the photograph taken by consciousness of the sensations which have bombarded it into activity." The chapter on vision is attractive and the theories of colour-vision are submitted to an acute analysis. Let us give one more example of the author's style. "The cochlea of a cat is not less elaborate than that of a man, yet man's mental life is based upon the analysis of auditory sensations. His supreme advance in the animal scale has depended upon the invention of language, by means of which he communicates and receives information, thus rendering experience eternal, notwithstanding the transience of the individuals who acquire and transmit it. An animal is born, finds out, dies. A man starts with the wisdom of the race beneath his feet."

We have said enough to show how attractive and original is the "setting" of this work, in which the author has endeavoured—and we think successfully—to reflect the intrinsic interest of the science apart altogether from its medical applications. Medical men, as well as the "amateur of science," will find much that is interesting, instructive, and suggestive in "The Body at Work."

Emergency Surgery for the General Practitioner. By JOHN W. SLUSS, A.M., M.D., Professor of Anatomy, Indiana University School of Medicine, &c. With 584 illustrations, some of which are printed in colours. London: Rebman, Limited. 1908. Pp. 692. Price 15*s.* net.

THIS is a practical handbook, which aims to instruct the general practitioner in the performance of operations, especially those which are needed suddenly. It has many merits and the author is evidently well qualified to give instruction on such a matter, but the style is a little abrupt and the directions are too brief to be of the first value to the unpractised surgeon. The object of this brevity is, no doubt, to save space, but we consider it would have been well to give more ample directions, even though the size of the book might have been doubled. We are inclined to think that the author has been a little too ambitious in his design: he has aimed at making the general practitioner attempt operations which would be almost certainly beyond his powers, operations which are not free from difficulty even to a surgeon in special practice with all the facilities which a hospital and trained assistants can give.

There are a few places where we would suggest alterations when a second edition is required. On p. 8 the author is describing what should be done in preparing for an operation in a private house. We find this: "Everything having boiled sufficiently, carry the vessels into the operating room and empty the contents of each into its special receptacle. If these bowls have not been boiled now is the time to sterilise them by singeing with burning alcohol." Apparently the bowls are to be sterilised *after* the sterilised dressings or instruments have been put into them. Then this follows: "Fourth step. Direct the assistants to begin the anæsthesia, and now prepare your hands." The preparing of the hands will take about 15 minutes, for the "scrubbing," we are told, must take at least ten minutes. Then the field of operation is to be prepared, and we are told that the disinfection of the patient's skin must be in every respect as thorough and vigorous as that of the hands. If so it must take as long. Finally, the operator has to wash his hands again. If these directions are literally followed more than half an hour must elapse from the commencement of the anæsthesia to the commencement of the operation. This is certainly quite unnecessary in the vast majority of cases, and it would be an undesirable prolongation of the anæsthesia. Nothing is said as to the use of gloves, which are often of much value in general practice, especially in midwifery work.

The section on Intussusception commences with an account of a case of the condition and of the method of treatment adopted. The child had had symptoms for three days before she was seen by the surgeon. She had been passing blood and mucus and she had fæcal vomiting. Some thickening was felt in the right iliac region, but no distinct tumour. The surgeon decided to operate, but postponed the operation to the next morning and meanwhile gave the child strychnine, morphine, and saline enemas. The child was operated on and recovered completely. There may have been some special reason for the postponement of the operation, but none is mentioned, and it is surely undesirable to give as a typical instance of intussusception a case in which the surgeon postponed the operation for apparently 12 hours and meanwhile gave strychnine and morphine. Intussusception cannot be operated on too soon if the diagnosis is certain, or even almost certain, and in the case quoted the signs of intestinal obstruction were complete.

The illustrations are very numerous and good. Many of them are old friends that we have often met before. It is a pity to insert an illustration (borrowed from Farabeuf) representing a surgeon denuding the calcaneum in a Syme's operation with the surgeon's coat sleeves and cuffs visible. It will give the reader a false idea of the costume desirable for an operation. The original illustrations are especially good.

Lehrbuch der Augenheilkunde. By Various Authors. Edited by Dr. THEODOR AXENFELD, Professor of Ophthalmology in Freiburg. With ten coloured plates and 455 illustrations in the text. Jena: Gustav Fischer. 1909. Pp. 679. Price 14 marks.

ANY work which comes out under the ægis of the distinguished professor of ophthalmology at Freiburg demands respect. Though this text-book is quite good, however, it fails in our opinion to justify itself. A text-book on ophthalmology of the size and limitations of the present must needs submit to comparison with numerous others already in the field and well established, above all with that of Professor Fuchs, which we have never seen equalled and seldom approached in excellence. It has the disadvantage, more than counterbalancing all the advantages in a book of this kind, of being written by a variety of authors. They are all well qualified, in most cases specially qualified, to deal with the sections allotted to them, but not all are equally good at exposition, and the general result lacks that identity of outlook which is so useful in a text-book intended for the use of students.

After introductory chapters on therapeutics and the examination of the eye by the editor, ophthalmoscopic differential diagnosis is discussed by Professor Elschnig. Then follows a chapter on physiological optics by Professor Heine. It does not appear quite rational to discuss ophthalmoscopic details before dealing with the elements of optics, which, however, first find their place in this chapter. Professor Bielschowsky follows with errors in the motility and position of the eyes, a subject which he has made peculiarly his own. The student is next plunged into an able discussion of the comparatively rare congenital anomalies of the eye by Professor E. von Hippel. Only at this stage is the real subject matter of a moderately sized text-book on diseases of the eye attacked. The diseases of various parts of the eye are written by the following authors: lids, by Professor von Hippel; lacrymal organs, by Professor O. Schirmer; conjunctiva, by Professor Axenfeld; cornea, by Professor Elschnig; uveal tract, by Professor Krückmann; lens, by Professor Bach; lymph circulation and glaucoma are allotted to Professor Peters; diseases of the retina and optic nerve to Professor Greeff; injuries and sympathetic ophthalmia to Professor O. Schirmer; diseases of the orbit to Professor Peters; and general diseases having ocular symptoms to Professor Heine. With few exceptions, which it would be invidious to mention, the sections could not be in better hands. We think that there is a tendency throughout to fall into a common failing of text-books, that of trying to include too much. Many rarer conditions are mentioned cursorily, but only in such a manner as to confuse the student without giving any valuable information. As is to be expected in a German text-book due attention is paid to pathological anatomy. The illustrations in the text are admirable; the coloured plates of ophthalmoscopic drawings leave much to be desired.

Syphilis, its Diagnosis, Prognosis, Prevention, and Treatment. By THOMAS PUGH BEDDOES, M.B., B.C. Cantab., F.R.C.S. Eng., Surgeon to the London Hospital for Diseases of the Skin; Surgeon to the Westminster General Dispensary; Registrar, London Lock Hospital, &c. London: Rebman, Limited. 1909. Pp. 224. Price 5*s.* net.

VERY few books dealing only with syphilis have been published in this country; in fact, we cannot call to mind more than two others. Syphilis is usually treated with the other venereal diseases, but its sinister importance justifies its treatment in a monograph by an author who has had great opportunities of studying the pathology and treatment. In the compass of little more than 200 pages it is not possible to include an absolutely complete account of the disease, but Mr. Beddoes has succeeded in making a handy and readable volume, the most striking characteristic of which is its practical character, especially in the sections dealing with treatment.

A full account is given of the various methods of introducing mercury into the body. Mr. Beddoes agrees with nearly all British surgeons in holding that most patients can be treated throughout by the administration of the drug by the mouth. As to the comparative value of inunction and injections we are told: "If skilled attendance is available inunction is advantageous. If it is possible to give personal attention injections are preferable," and these sentences represent very fairly the general opinion. As to the use of arsenic compounds, the author considers that they are specially indicated when the beneficial effect of mercury is temporarily exhausted and when there is mercurial stomatitis; and that they should not be used in cases with a history of alcohol for fear of neuritis, or in cases where there is a lesion of the retina or optic nerve. An appendix contains warnings and instructions to be given to syphilitic patients, and many practitioners will find that it is convenient to have at hand these directions.

We have formed a very favourable opinion of the book. We consider it likely to be useful to senior students and to medical practitioners who wish to have a fuller account of the disease and especially of the treatment than is to be found in the text-books. We are inclined to think that the value of the book would be enhanced by some carefully selected illustrations and we hope to see them in a future issue.

Handbuch der Röntgentherapie. By Dr. JOSEF WETTERER, Mannheim. Leipsic: Otto Nemnich. 1908. Pp. xcv.–799. Price M. 27.

THIS is a very imposing work, running as it does to nearly a thousand pages and containing numerous illustrations and diagrams in colour and monochrome—all devoted to the therapeutics of the x rays and radium. A perusal of its pages shows it to have been prepared with a vast amount of care as regards the selection and arrangement of its contents. The author being a specialist in dermatology, it is only natural to find that skin diseases receive a very full share of attention. At the same time the action of these rays on other organs and tissues comes in for complete discussion. Among the diagrams we notice one which we do not remember having seen before. It relates to the sensitiveness of the various tissues to the x rays and from it we gather that lymphatic tissue is the most and cartilage the least sensitive.

In the section devoted to apparatus the best part is that relating to the focus tube. Some coloured plates are given showing tubes in action, but we think the colouring in these leaves room for improvement. The coloured plates of x ray dermatitis and various skin diseases under treatment are most excellent and form a valuable feature of the work. Technique and protection from any undesired action of the rays on patient or operator are fully described; some of the appliances for protection are very weird, especially the x ray proof suit or overall depicted on page 159. However, the more we learn about the effects of the x rays on living tissues the more we feel that no precautions can be too elaborate or complete if the x ray worker is not to suffer in one way or another. This is a matter that deserves much more attention on the part of the medical profession than it has received. In addition to the exhaustive treatise on skin diseases the author describes his experiences in the treatment of epithelioma of the face and carcinoma of the breast. The section on radium is a very good one and will be of special interest at present. Some of the radiographs made by radium are of exceptional interest and will be quite new to most people. The extent of the author's research into his subject may be gathered from the extensive bibliography given at the end of the work—about 100 pages.

We have said sufficient to indicate the valuable nature of this book. It is a credit to the publisher as well as to the author.

JOURNALS AND MAGAZINES.

The Quarterly Journal of Microscopical Science. Edited by Sir E. RAY LANKESTER, K.C.B., F.R.S., with the co-operation of ADAM SEDGWICK, M.A., F.R.S., SYDNEY J. HICKSON, F.R.S., and E. A. MINCHIN, M.A. With lithographic plates and text figures. New series, No. 210 (Vol. LIII., Part 2), January, 1909. London: J. and A. Churchill. Price 10*s.*—This very full and important part, in which we think we can discern the guiding hand of Mr. E. A. Minchin, the professor of protozoology in the University of London, whose labours in his department are surely worthy of the F.R.S., contains: 1. Some Observations on the Infusoria Parasitic in Cephalopoda, by C. Clifford Dobell, Fellow of

Trinity College, Cambridge, Balfour student in the University. The infusorial parasites of the cephalopoda are rare, only three species being known—viz., Opalinopsis sepiola, Chromidina elegans, and Chromidina coronata—and they occur in only 3·5 per cent. of the specimens examined. They are found either in the liver or kidneys, chiefly in the latter. The article is accompanied by a plate, with 19 figures, showing the anatomy, the chromatin, and net-like nucleus. The interpretation of the appearances presented is not in accord with that of Gonder. 2. Researches on the Intestinal Protozoa of Frogs and Toads, with one text figure and Plates 2, 3, 4, and 5. After enumerating the various parasites of the frog and toad, Mr. Dobell gives detailed descriptions of those organisms the life-histories of which have especially engaged his attention. These are the trichomonads, Trichomastix batrachorum (Dobell) and the Trichomonas batrachorum Perty; the octoflagellata, Octomitus dujardini; the Monocercomonas bufonis Dobell; the rhizopoda Entamœba ranarum Grassi; the Chlamydophrys stercorea (Cienkowski); and amongst the sporozoa the Eimeria ranæ (Dobell). He adds a note on the encystment of Nyctotherus cordiformis (Ehrenberg); and another the culture of Balantidium entozoon (Ehrenberg). 3. Chromidia and the Binuclearity Hypothesis: a Review and a Criticism, by C. Clifford Dobell. After giving an excellent summary of the present state of our knowledge of these subjects, Mr. Dobell remarks that "there is one other interesting conclusion which may be drawn from the facts regarding chromidia. It is that an actual cell death exists in the 'immortal protozoa.'" An excellent bibliography is appended to this article. 4. The Eyes of Chrysochloris Hottentota and Chrysochloris Asiatica, by Georgina Sweet, D.Sc., University of Melbourne, with one plate and one text figure. This is a very careful description of the eyes of certain Cape moles. 5. Further Occurrence of Nuclear Dimorphism in a Halteridium Parasitic in the Chaffinch and the Probable Connexion of this Parasite with a Trypanosome, by H. M. Woodcock, D.Sc. Lond., assistant to the professor of protozoology in the University of London. 6. Some Observations on Acinetaria, by C. H. Martin, B.A., demonstrator in zoology at the University of Glasgow; with Plates 7 and 8.

The Dublin Journal of Medical Science.—Mr. John Burgess, writing in the February number, advocates a trip to Montreal as a pleasant way of spending a three weeks' holiday. Dr. J. Johnston Abraham writes on present-day treatment of syphilis, advocating injections of grey oil and recording little benefit as resulting from treatment by atoxyl and its allies. Dr. Charles Greene Cumston continues his study of methods of sterilisation of the hands, which is concluded in the March issue. In the latter issue Dr. W. R. Dawson records some notes of a year's work in a mental hospital. Mr. William Taylor gives notes of some cases of gastric surgery, and Dr. Howard English discusses upland surface water as a carrier of lead and consequent source of poisoning.

The Edinburgh Medical Journal.—The February number opens with an interesting paper by Dr. John D. Comrie on Medicine among the Assyrians and Egyptians in the Year 1500 B.C., with illustrations of the famous code of Hammurabi and of some Egyptian surgical instruments. Dr. Byrom Bramwell records a remarkable case of hæmorrhage into the pons and medulla ingravescent in type, and Mr. Alexander Don writes on the value of injections of bismuth into cavities both for diagnosis and treatment. Mr. J. W. Dowden advises excision of perforating ulcers of the duodenum in the long axis of the viscus and suture in the transverse direction. Dr. R. W. Philip writes on the use of tuberculin in surgical cases and praises Béraneck's preparation; and Dr. A. I. Shepheard-Walwyn records a case of pulmonary abscess and pneumothorax secondary to urinary infection.—In the March issue Dr. A. Campbell Geddes gives details of the examination of the body of an acromegalic subject which showed great enlargement of the hypophysis and also of the thyroid, of the brain, and of the peripheral nerves. Dr. G. Lovell Gulland discusses stonemason's phthisis and concludes that the powder inhaled first admits the entrance of tubercle bacilli and then helps to limit the mischief caused by them, owing to the fibrosis which it induces. Dr. J. Edward Bowser and Mr. H. Alexis Thomson record cases of Schlatter's disease or inflammation round the tubercle of the tibia.

The Medical Chronicle.—Much has been written about the health of school children, but little about that of their teachers. In the February issue of this magazine Dr. R. T. Williamson devotes an article to this latter subject and points out the heavy mortality among teachers from tuberculosis, and also their liability to nervous disorders and to affections of the throat. Mr. P. R. Wrigley records two cases of intestinal obstruction due to volvulus, and Dr. E. M. Brockbank four cases of rumination in man. In the March number Mr. Harold Upcott discusses Gastric Diagnosis, with special reference to cancer, laying some stress on the appearance of bacteria rather than torulæ and sarcinæ in the contents of the fasting stomach as suggestive of carcinoma; and Dr. J. Rose Bradford contributes an interesting paper on nephritis, mentioning, among other things, the value of mercury in some cases of albuminuria, presumably due to syphilis, and also the existence of cases in which much albumin is constantly passed, yet the patient suffers little or not at all, apparently a functional albuminuria of adults.

The Birmingham Medical Review.—In the January number of this review Dr. Charles Greene Cumston writes on the possible association of cyclical vomiting in children with chronic disease of the appendix. Mr. Henry Eales deals with ocular affections due to nasal disease in the form of sudden proptosis due to invasion of the orbit by extension of suppuration from an accessory sinus, and retro-bulbar neuritis arising from implication of the optic nerve in disease of the sphenoid sinus or posterior ethmoid cells. Mr. F. Victor Milward records a case of traumatic rupture of the spleen in an infant, aged 18 months, successfully treated by laparotomy.

The Liverpool Medico-Chirurgical Journal.—Among the articles included in the January issue of this quarterly we may mention one by Dr. J. Milne Bramwell on the treatment of obsessions by suggestion, in which the value of this procedure in some cases of sexual disorders is noted. Dr. N. Percy Marsh and Dr. Owen T. Williams write on lumbar puncture in meningitis occurring in children, and Dr. George Taylor records three cases of lymphatic leukæmia. Mr. Robert Jones describes a method of treating Volkmann's ischæmic paralysis the result of tight bandaging, and Mr. G. P. Newbolt writes on suprapubic prostatectomy. Mr. F. T. Paul describes some recent cases of tumours surgically removed and gives illustrations of their microscopical structure. Dr. D. Moore Alexander contributes a paper on the Bacteriology of the Intestine, and Dr. H. Leith Murray discusses the value and limitations of Ehrlich's diazo test.

LONDON SCHOOL OF TROPICAL MEDICINE.—Arrangements have been made for lectures on tropical subjects to be delivered to nurses at the London School of Tropical Medicine, Royal Albert Dock, E. Any qualified nurse may attend the course whether she intends proceeding abroad or not. The first course, which will commence on Oct. 15th, 1909, will be given by the following: Mr. James Cantlie, Dr. C. W. Daniels, Dr. Andrew Duncan, Dr. R. T. Leiper, Dr. J. M. H. MacLeod, and Dr. F. M. Sandwith.

Reports and Analytical Records

FROM

THE LANCET LABORATORY.

BACTERIAL VACCINES.

(PARKE, DAVIS AND CO., BEAK-STREET, REGENT-STREET, LONDON, W.)

THREE new vaccines have been submitted to our notice which are prepared in the vaccine laboratory of the department for therapeutical inoculation at St. Mary's Hospital under the supervision of Sir Almroth Wright. Two of these are prepared for the treatment of varying forms of acne. The first is a mixed vaccine which is intended to be used when the presence of both the staphylococcus and the active bacillus is suspected. The vaccine contains 200 million staphylococci and 8 million acne bacilli per cubic centimetre and is applicable to cases in which the staphylococcus is the dominating organism and when the lesions assume a sub-furuncular form. On the other hand, the acne bacillus vaccine contains that bacillus alone and is applicable to cases in which the staphylococcus if present is but a subordinate agent, as in non-pustular forms with comedones as a principal feature. Suppurative forms of acne are treated with a pure staphylococcus vaccine. The third new vaccine submitted to us is prepared from the micrococcus neoformans of Doyen and is said to be a useful auxiliary in the treatment of cancer, relieving pain by suppressing local inflammation whilst diminishing, it is also stated, the cachexia. These preparations mark the advances of modern therapy.

GUIPSINE.

(ASTOR BOISSELIER, 13 AND 14, TRINITY-SQUARE, TOWER-HILL, LONDON, E.C.)

This preparation is prepared under the supervision of M. Leprince, the well-known French pharmaceutical chemist, who, in a recent communication to the Académie des Sciences, reported that he had succeeded in isolating from fresh mistletoe a volatile and liquid alkaloid yielding certain well-defined crystals which proved to be composed partly of a glucoside and partly of a resin. Mistletoe apparently owes its therapeutic properties to these constituents. It appears to be chiefly valuable for the relief of arterial hypertension and has been employed in arterio-sclerosis, hæmoptysis, gout, leucorrhœa, and so forth. Mistletoe has apparently been recognised in medicine for a very long time, and more particularly in regard to its antispasmodic properties, while Pliny and Paracelsus, amongst others, have remarked its efficacy in epilepsy. Guipsine is prepared for administration in the form of pills, each of which is stated to contain five centigrammes of the active principles of mistletoe.

(1) ERGOTOXINE PREPARATIONS; AND (2) VAPOROLE COCAINE HYDROCHLORIDE AND VAPOROLE MORPHINE HYDROCHLORIDE.

(BURROUGHS, WELLCOME, AND CO., SNOW-HILL BUILDINGS, LONDON, E.C.)

1. Messrs. Burroughs, Wellcome and Co. report to us that there is no foundation for the statements that have been made that the alkaloid ergotoxine is not yet obtainable in the pure state and that its action in causing paralysis of the motor fibres in the sympathetic is due to the presence of some impurity. In refutation of these statements they have submitted to us a specimen of pure ergotoxine phosphate. This is a perfectly definite salt crystallising in needles, and melting at 186°–187° C., from which the alkaloid ergotoxine can easily be separated in a chemically pure state. As regards its physiological action, it has been shown that while ergotinine is perfectly inactive, ergotoxine produces, and its salts produce, the familiar effects of ergot on the blood pressure and the uterus. Further, ergotoxine and its salts were found to produce the secondary paralytic effect on motor fibres of the sympathetic system. Ergotoxine must be regarded as physiologically and chemically distinct from cornutin. For hypodermic use ergotoxine is contained in solution under the name of ernutin. 2. We have also received specimens of Vaporoles containing (1) cocaine hydrochloride and (2) morphine hydrochloride in sterilised solution especially prepared for hypodermic injection.

VARIOUS SOUPS.

(JOSEPH CAMPBELL CO., 6 AND 8, BOUVERIE-STREET, LONDON, E.C.)

Judging from the excellent condition in which the soups we examined appeared to be, it is fair to conclude that they are prepared with care and with regard to hygienic requirements. We examined with particular thoroughness the tomato soup with reference especially to the presence of preservatives and of metallic contamination. There was no evidence o either. A clear consommé was also examined with similar results. The soups were satisfactory as regards flavour and showed further a distinct quantity of nutritives in solution.

D.C.L. LONDON DRY GIN.

(THE DISTILLERS CO., LIMITED, 8, 10, AND 12, TORPHICHEN-STREET, EDINBURGH.)

The results of analysis disclosed a very pure and "clean" spirit, that is to say, it was practically free from the aldehydes and furfural present in many potable spirits, though it contained a small quantity of compound ethers represented by the figure 26·2 parts per 100,000 parts of alcohol present The alcohol amounted to 47·13 per cent. by volume, the extractives to 0·05 per cent., and the mineral matter to *nil*. The spirit possessed the peculiar agreeable flavour of the oil of juniper berry, which is credited on good grounds with diuretic properties.

(1) DUSMO; AND (2) LYNDUS.

(MESSRS. DUSMO, LIMITED, WEST HAM-LANE, STRATFORD, LONDON, E

According to a practical trial we have made Dusmo promises to be a useful sanitary adjunct. Its purpose is to pick up the dust lodged on the surface of carpets and this it does by virtue of containing hygroscopic and mildly adhesive constituents. It may, in fine, be described as a hygroscopic sawdust which when swept along the carpet removes the superficial dust and to an extent renovates the colour on account of this removal. It is a quite simple expedient and answers well. Whether the particular salt contained in the substance would not act in the long run injuriously on the carpet is a question that every householder will ask, and we are assured that such is not the case. Lyndus performs a similar duty, but being mixed with sand is applicable for the removal of dust from smooth surfaces such as linoleums or polished floors.

ALLOSAN.

(WIDENMANN, BROICHER, AND CO., 33, LIME-STREET, LONDON, E.C.)

Allosan is described as the allophanic acid ester of santol. Allophanic acid is related to urea and may be formed from that substance by the action of chlor-carbonic esters upon it. Allosan appears to act like sandal-wood oil, and is therefore useful for the destruction of the gonococcus, while it is described as having the action briefly "of a good and faultless balsamic." It is stated to be successful in the treatment of gonorrhœa, to be non-irritant, and to be free from objectionable secondary effects, and is therefore tolerable to a degree not attained by similarly constituted preparations. It is a pure white crystalline salt.

THE LANCET.

LONDON: SATURDAY, MARCH 27, 1909.

Medical Inspection and the Annual Report of the Board of Education.

THE proceedings of the Board of Education have now, and will henceforth in greater degree have, an interest for medical readers, and the fact furnishes one more illustration of the manner in which medical science is gradually permeating the affairs of the State. The medical department of the Local Government Board has been with us for many years and is, as it were, part of our daily life; and year by year the doings of the medical department of the Home Office acquire increasing interest for us owing to its growing influence upon some 5,000,000 of the population who are engaged in industrial pursuits. And now there is the medical department of the Board of Education raising its, as yet, small voice, but a voice replete with all the potentialities and enthusiasm of infancy and an unknown future. As we watch these developments we are tempted to reflect as to their tendencies. Do they mean that within the next quarter of a century there will be a great public health service representing the knowledge and interests of each State department, or do the facts suggest that there will be departmental independence and perhaps divergence rather than convergence? As yet it is too early to prophesy or even to discuss with profit the *pros* and *cons* of the alternatives, and we can only hope that in the meantime there will be the most cordial coöperation between all the medical departments concerned.

The space occupied by medical subjects in the current (1907–08) report of the Board of Education is but small, in keeping perhaps with the embryonic proportions of the medical department, but we are promised a special report at an early date which will supply detailed information as to the steps taken by the various local education authorities. The Board, however, states that as the result of experience already gained it is convinced that the general lines laid down in its first memorandum (Circular 576)[1] are those which must be followed if the organisation of medical inspection is to be placed upon a broad and sound basis, and it is satisfied that substantial progress in the organisation of the work is being made throughout the country. Local education authorities are, it reports, with few exceptions, doing their best to perform the duties imposed upon them by Parliament. We have already noticed some of the local annual reports in our columns, and we are able to testify that in the case of the few reports which have as yet reached us the local authorities do appear to be taking their duties in a serious and responsible fashion. In the special case of London, on account of the experience gained in the past six years, the Board of Education has agreed to approve a somewhat modified and limited scheme[2] called for, perhaps, by the peculiar circumstances of the case, and in approving this scheme the Board has not insisted upon its full requirements being carried out in respect of every child. It appears that the arrangements which the Day Schools Subcommittee of the Education Committee of the London County Council are making under this modified scheme will insure that the complete inspection of every child admitted to or leaving school shall be carried out in a limited number of schools only. As regards individual examination of all the children, this will be confined to a further limited number of schools, and the records will not be so elaborate as those prescribed by the regulations of the Board. In the large majority of schools such individual examination will only be made when the children present abnormality. This year the records will be taken of the height and weight of children attending 80 schools only and the scheme will be further developed throughout the year and in 1910. The Board of Education is content with this scheme for London, and we have no doubt that it is the best which can be secured in the circumstances.

As regards the Education (Provision of Meals) Act, 1906, the Board reports that up to the end of July, 1908, 51 local education authorities have been authorised to spend money from the rates in providing food for school children; and with respect to the teaching of hygiene we are glad to see that the teachers will in future be called upon to take one paper on this important subject. There are now several open-air schools in operation during the summer months, the example of Germany in this matter having been followed. At these schools opportunities for physical instruction, games, and nature study are afforded, and there are intervals for midday rest. Meals are provided under various conditions of payment. All these open-air schools have been carried on under the Elementary Education (Defective and Epileptic Children) Act, 1899, and the children were selected after medical examination, forming a further excellent example of the way in which the teachings of medicine are more and more employed in our sociological developments.

The Story of Malaria in Mauritius.

THE recent reports of Professor RONALD ROSS and Major C. E. P. FOWLER, R.A.M.C., on malaria in Mauritius furnish an interesting chapter in the history of that disease and give a striking illustration of the application of modern methods to the scientific investigation of tropical medicine. In 1907 Lord ELGIN, at that time H.M. Secretary of State for the Colonies, requested Professor ROSS to proceed to Mauritius to inquire into the circumstances associated with the continued endemic presence, and the threatened epidemic prevalence, of malarial fever in that colony, and to advise the local government and their officials as to the most appropriate measures which should be

[1] THE LANCET, Feb. 22nd, 1908, p. 585.

[2] THE LANCET, Nov. 21st, 1908, p. 1568.

employed. Major FOWLER was at the same time instructed by the Director-General of the Army Medical Department to sail for Mauritius to assist Professor ROSS in his investigations. Their joint inquiry lasted some three months and their respective reports give a graphic account of the commencement of the malarial prevalence in the island. For many years after the European occupation Mauritius continued to enjoy complete freedom from the manifestations of endemic malaria, and was, in fact, used as a health station by many convalescents who had been debilitated by the ravages of this or other tropical diseases in neighbouring countries. Notwithstanding this freedom from endemic malaria it was well recognised that in the island there existed all the conditions usually associated with the occurrence of the disease, including considerable areas along the low-lying littoral occupied by swamps and marshes, as also inland streams and watercourses obstructed by the exuberant growth of tropical vegetation, forming ideal breeding-grounds for mosquitoes of all kinds. Though these breeding-grounds were infested by mosquitoes none of the native species appeared to have been capable of transmitting malaria. It has to be noted in this connexion that for a series of years not only had convalescent European malarial patients been visiting Mauritius but large numbers of coolies had been flocking into the colony, finding work in the numerous sugar plantations in the island. Many of these coolies, it is admitted, had come from malarial districts in India, and some of them had previously suffered from attacks of that disease. It would therefore have been possible for malaria-transmitting mosquitoes, if such had been present, to obtain a plentiful supply of the specific parasites from the blood of such persons, and in this way to have disseminated the disease.

Until 1865 or 1866 all went well but at this time there seems to have arrived in Mauritius a dangerous anopheline, the *Pyretophorus costalis*, a native of the East Coast of Africa. It is surmised that some specimens of this mosquito arrived, stowaways, as it were, concealed on board some sailing ship. The conditions which the newcomers found on their arrival in Mauritius were so extremely favourable to them that in a short time they increased and multiplied exceedingly. The presence in the island of a number of Indian coolies who had formerly suffered from attacks of malarial fever and in whose blood existed the special parasites of the disease, soon enabled these African anophelines to commence the transmission of the infection on a large scale. So rapid, indeed, was the transmission that in 1867 a terrible epidemic was raging over the whole island, devastating almost every district. The official accounts give the number of deaths which resulted from the epidemic of malarial fever in 1867–68 as amounting to 43,000 in an estimated population of about 350,000. Other accounts place the mortality even higher than this, some persons asserting that at least 60,000 souls perished in the two years during which the epidemic lasted. So sudden and so virulent was the outbreak and so appalling was the mortality that some observers regarded the current malady as likely to have been cholera or plague rather than malarial fever. After this epidemic outburst malaria became endemic in Mauritius, more particularly in the low-lying localities along the coast. In more recent years the malady has been showing signs of extension landward, and cases have been occurring even in the more elevated regions previously regarded as perfectly safe from the disease, and some villages and encampments situated 1000 feet or more above sea level have been invaded. In 1906 grave fears began to be entertained, owing to the increased number of cases of malarial fever coming under observation, that another serious epidemic like that of 1867–68 was impending. It was in these circumstances that outside aid was sought and resulted in the dispatch of Professor ROSS and Major FOWLER to the colony. In their reports these two experts make it quite clear that the *Pyretophorus costalis* is the transmitter of malaria in Mauritius and that unless its breeding grounds are destroyed this mosquito will continue to exist in such numbers as to injure seriously the health of the population. For this reason extensive schemes for draining swamps and marshes will have to be undertaken.

It is unfortunate that such major works cannot be carried out without considerable expenditure of money and must occupy some time. Meanwhile, however, appreciable reduction of these dangerous mosquitoes may be secured by minor measures for obliterating the existing pools of standing water, especially in the vicinity of villages or camps. For this purpose Professor ROSS recommends the organising of gangs of "moustiquiers," men trained in all knowledge relating to mosquitoes, to fill up all hollow places which hold water and provide breeding grounds for the anophelines, to destroy the larvæ, and in other ways to wage war continually against these dangerous insects. Major FOWLER, it may be mentioned, has obtained evidence that the larvæ of infected mosquitoes when fully developed are not, as some maintain, able to propagate malaria until they themselves have received infection from human subjects—that is to say, the malarial infection is not transmitted to its offspring by the mosquito. Further remedial measures include the stocking of ponds and ornamental waters, such as cannot conveniently be filled up, with goldfish which are known to prey with avidity on the larvæ of mosquitoes. Gangs of labourers, too, are needed to clear obstructed streams and watercourses. Quinine prophylaxis is also strictly enjoined to protect the healthy from the parasites or to prevent relapses in those previously attacked. In some localities it may be useful, Professor ROSS says, to have a systematic house-to-house distribution of quinine. The use of mosquito nets in houses, wire-gauze screening for windows and verandahs, the protection especially of the hands and feet from the bites of mosquitoes, and in some cases even the application to the skin of some culicifuge like lavender oil are advised. In order to ascertain the prevalence of malaria in villages Professor ROSS urges a periodical examination of all children under 16 years of age for enlargement of the spleen. This splenic enlargement being an index of the amount of malaria in a district all sufferers from this condition of the spleen should be systematically treated with quinine to keep the malarial parasites out of the peripheral circulation where the mosquito can reach them while it feeds. These measures have already been tried elsewhere, and Professor ROSS quotes the favourable results obtained from somewhat similar procedures carried out at Ismailia, the Federated Malay States,

Hong-Kong, and the Panama Canal zone. The annual cost of these measures in Mauritius is estimated at £9000. Obviously the situation is serious, and if the increasing manifestation of malaria is to be stopped and the colony restored to something like its healthy condition previous to the epidemic of 1867–68, no expense should be spared by the authorities to attain that end.

The Conversion of Carcinoma into Sarcoma.

OF the many important and interesting papers contained in the Third Scientific Report of the Imperial Cancer Research Fund, to which we have already referred in THE LANCET, there is probably none which transcends that by Dr. M. HAALAND, dealing with the transformation of carcinomata into sarcomata, for it enables us to see something of the process during which normal healthy cells become converted into malignant cells. Only a few years have elapsed since JENSEN showed that a spontaneous carcinoma in a mouse could be inoculated into other mice, and these inoculation experiments have been successfully confirmed. Two main objections were raised at first to these experiments. On the one hand, it was widely asserted that "JENSEN'S tumour" was not a true carcinoma, but this objection has now been almost entirely given up, for the growth is in every respect a typical carcinoma. On the other hand, as the proportion of successes was at first small, it was objected that mere coincidence or the trauma of the inoculation might explain the occurrence of the new growth. In EHRLICH'S experiments in inoculating the hæmorrhagic mouse tumours only one success was obtained out of 500 inoculations and this might have afforded some support to the objection, but recently at the laboratories of the Imperial Cancer Research Fund from 80 to 100 per cent. of successes have been obtained. Another objection may be mentioned. Some critics have desired that the inoculation experiments should be performed on larger animals than rats and mice. To a small extent this has been done, so that we are certain that these experiments can be performed equally successfully on dogs, but there are obvious difficulties in the way of the inoculation of large animals on an extensive scale. Soon after carcinomatous tumours were successfully grafted it was agreed by all investigators that the parenchymatous cells of the inoculated tumour were the lineal descendants of the cells of the original growth, as was first shown by JENSEN in 1903, but the question of the source of the fibrous tissue of the engrafted tumour was much more difficult. Several careful investigations, however, ultimately settled that the stroma of the portion of the tumour inoculated degenerates after transplantation and that the new stroma is formed as a specific reaction on the part of the host. From these observations it follows that the stroma of a carcinomatous tumour is to be considered as normal tissue, while the parenchyma alone possesses malignant properties.

In 1905 a startling new fact was discovered by EHRLICH and APOLANT: this was that the stroma in certain transplantable mouse carcinomata gave rise to a new and distinct kind of tumour tissue—namely, a transplantable sarcoma. This change was observed in three cases; in each instance the tumours had been propagated over a long period and through many generations as a carcinoma without showing any sign of admixture. The change consisted in a sudden appearance of sarcomatous tissue between the alveoli of the carcinoma, and it replaced the original stroma. Then as time went on and the tumour passed through further series of mice the sarcomatous tissue grew more and more prominent and the carcinomatous tissue became less and less conspicuous, until at last it disappeared completely and the whole tumour was a pure sarcoma. The time required for the process varied. In EHRLICH and APOLANT'S cases the sarcomatous tissue appeared in one series in the ninth generation, while in another it was only after 67 generations that the change occurred. When the mixed tumour has arisen one or two generations may suffice to convert it into a pure sarcoma, or 10 or 14 may be needed. It was suggested that the carcinoma disappears because the energy of its cells is exhausted, but EHRLICH showed that the carcinoma cells removed from a mixed tumour can be isolated and can then be propagated for many generations.

That these new stroma growths are true sarcomata, and not infective granulomata, has been shown by the formation of metastases in the pulmonary artery by emboli of tumour cells. This conversion of carcinoma to sarcoma has been observed to occur twice in one of the strains of mammary carcinomata, collected in the laboratories of the Imperial Cancer Research Fund. The mode of development has been thoroughly investigated, and the conclusion arrived at was that the development of sarcoma was explicable as a new or altered form of specific reaction to influences proceeding from the carcinoma cells. Dr. HAALAND has succeeded in showing that there is no foundation for the suggestion that these tumours are spontaneous sarcomata, and the idea that the original tumour was a mixed growth is proved to be equally devoid of basis, for in many of the cases the tumour underwent frequent transplantations as a pure carcinoma before it developed any traces of sarcomatous nature. Another suggestion has been made that the sarcoma cells are derived from the carcinomatous parenchyma. In answer to this Dr. HAALAND points out that the sarcoma cells present all the characters of true connective tissue cells, intracellular fibrils, and collagen fibres between the spindle-shaped elements. The process of development of the sarcoma takes place from beginning to end in the interstitial tissue, and there is no evidence of a transformation of carcinomatous elements into sarcomatous. As to the exact histological process by which the change occurs, all that is known is that the first alteration is an increase in the amount of the stroma and in the proportion of its cellular elements. Further than this it is not at present possible to go. The fact remains that on many occasions there has been observed a definite transformation of a true carcinoma into an equally true sarcoma through the taking on of a sarcomatous character by the normal interstitial connective tissue supplied by the host. The observations are of vast importance, but there yet remains to be determined the nature of the excitant derived from the carcinomatous cells and acting on the stroma cells so as to convert them into sarcomatous elements. This paper is a good example of the valuable work which is

being done by the Imperial Cancer Research Fund, and we may look forward with hope to some results as to the exact mechanism, whether chemical, vital, or microbic, by which the healthy normal cells become converted to malignancy.

Annotations.

"Ne quid nimis."

THE GOVERNMENT MILK BILL.

ONE of the most unsatisfactory sides of our system of government is the difficulty which seemingly obtains in reconciling all interests involved in any given instance to such a degree as to render legislation upon it practicable. The necessity for a comprehensive Milk Bill had been obvious to all sanitarians and, indeed, to the thinking public, long before the issue of that report of the Royal Commission on Tuberculosis which satisfied us all what a very real danger existed in the consumption of tuberculous milk. But, notwithstanding all this and the knowledge which we possess as to the large amount of tuberculous milk that is daily reaching London and other large towns, the Milk Bill promised by the Government has not yet been made public. It is, of course, perfectly true, as Mr. Burns pointed out recently[1] during the debate on the London County Council (General Powers) Bill and Milk Legislation, that the consideration of another form of liquid had occupied so much Parliamentary time that "the poor milk consumer and the farmer and the dairyman were excluded from the purview of both Houses of Parliament," and it is clear that Mr. Burns himself is only too anxious to go ahead with the Bill of 20 pages which he was able to wave in the face of Mr. Walter Guinness, who on the part of the London County Council expressed himself as quite willing to allow Part III. of the Council's Bill to be dropped in face of the renewed promise of Mr. Burns to do his best to get the Government Bill through the House of Commons this year. In the meantime London in particular and the country as a whole, except for those few towns which through private Acts of Parliament have made some sort of provision of their own, must wait. We greatly hope that the President of the Local Government Board will be afforded an opportunity of introducing his Bill at an early date in order that free discussion may be given to its provisions. We gather that Mr. Burns does not regard the London County Council Bill as an effective method of solving the milk problem of London, and it seems that the Government Bill proposes to confer upon the County Council certain only of the powers asked for *plus* other provisions which will enable the Local Government Board in conjunction with the local health authorities to control in better fashion the milk-supply of the country generally. Apparently the Government does not consider what are known as the "model milk clauses" as really models at all, so that presumably the Bill now in print is to adopt another method of control. It looks therefore as if the Government Bill was to be a thoroughly comprehensive measure introducing uniform methods and standards. But, of course, the chief question is, What is the machinery proposed for enforcing action on the part of apathetic or recalcitrant authorities? The country is almost tired of optional measures and go-as-you-please local government, because almost daily the admirable reports of the medical inspectors of the Local Government Board show the futility of the whole process, especially in rural districts. Regulations under the Dairies, Cowsheds, and Milkshops Order are either not in existence, or if they are in existence they are not properly enforced. Unless, therefore, the Government Bill contains some provisions for constant inspection by persons with higher ideals than rural district councils, and provides, moreover, for superseding the local authorities either by county councils or central action, we must not expect too much from its working. But we are, on the whole, in favour of a comprehensive Government scheme rather than piecemeal legislation affecting only certain isolated portions of the country. It is convenient for a large town to be able to prevent the importation of tuberculous milk into its midst, but this same supply not improbably is furnished, perhaps less diluted, to the unfortunate residents of the rural district who possess no such machinery. What is needed is a comprehensive scheme to get rid of such supplies altogether.

[1] THE LANCET, March 20th, 1909, p. 882.

MEDICINE IN THE SHELDONIAN THEATRE.

FOR those of the profession who have the liking and (a not less vital condition) the leisure for "humanistic" study, the Clarendon Press has just provided a worthy and a welcome treat.[1] During 27 years it was the duty of Dr. W. W. Merry, as public orator, to introduce to the University of Oxford the recipients of her honorary degrees or to commemorate her deceased alumni, and this he discharged with an appreciation of character and of claim as apt and as felicitous as the Latinity in which it was conveyed. It has long been felt that these "orationes" possessed an interest and a charm not confined to the occasion or to the scene of their delivery, and so, in response to that feeling, their author has consented to make them *publici juris* in a volume in all respects worthy of the seat of learning which he adorns. We have thus a "march past" of men distinguished in nearly every department of professional life, on whose merits, public and private, the University has set her seal—a "pageant," if we may use the word, which represents and illustrates the higher activities of the kingdom and empire as involved within well-nigh a generation. Church and State, the Services, civil and combatant, the liberal callings, are each and all in evidence, none more vividly, we may be pardoned for indicating, than the medical faculty, whether in its scientific or in its clinical aspects. Early in the procession appears the figure of George Rolleston, professor of physiology, whose powers as an expositor were never more conspicuous than in his vindication of Harvey against Cesalpino and Servetus as discoverer of the circulation of the blood. Sir William Turner, "Hippocratis arte excellens," is the next to meet the medical eye; and after him the "Medicinae Professor Regius, Wilhelmus Osler, quem ad hanc Universitatem transmisit colonia Canadensis, virum amplissimis honoribus et ornamentis merito insignitum, in vetere haud minus quam in novo, ut dicitur, orbe propter scientiam et artem medicam diu comprobatum." Then follows, we might almost say *in propria persona*, Joannes Burdon Sanderson—so admirably is he delineated and depicted! "Etiam nunc habetis quasi in conspectu formam viri et speciem et staturam oculorum supercilii gravitatem. Quanta fuit in ore austeritas, quanta suavitas, nunc cogitationum intentionem testata, nunc remissionem!" Another kindly "shade" reappears for us in Walterus Raphael Weldon, the Linacre professor of anatomy, "vir inter amicos si quis alius comis, adfabilis, humanus; in lucubrationibus et laboribus indefessus, unde illud praecipue agere studebat ut rerum animantiumque

[1] Orationes tum Creweianae tum Gratulatoriae in Theatro Sheldoniano plerumque Habitae, Auctore W. W. Merry, D.D., Oratore Publico, Collegii Lincolniensis Rectore. Oxonii e Typographeo Clarendoniano. MCMIX.

varietates enumerando et componendo ad legem ac normam paene mathematicam cuncta posset redigere." Then follows a felicitous quotation from Lucretius, to put the finishing touch to a portrait which all who knew and studied under Walter Raphael Weldon must recognise as truly life-like. The present Linacre professor, Gilbertus Bourne, is the next to interest us among the medical figures, as he is also the last, before the long and varied pageant draws to its close. As we have said, the other callings in every walk of imperial or civil life, in science, literature, and art, have each their representatives, introduced to us by a few masterly strokes, all the more impressive and lasting from the truly "monumental" language in which they are given. Incidental touches on the *vie intime* of the University enliven the pages from time to time, including an invitation to "afternoon tea" (*hospitales matronarum mensas et pomeridiana pocula*)! Even the small-pox scare and revaccination have their place: "Ne variolarum contagio laborarent juvenes nostri medico venam committere sunt ausi, qui cum semel 'rem acu tetigisset' adspiceres athletas prae terrore exsangues delabi, deinde bracchio lanis fasciisque obvoluto sodalium propinquitatem reformidare!" We congratulate the rector of Lincoln on his volume, redolent as it is of academic culture, worthy, too, of a scholar who is not only a famous expositor of Aristophanes but has shown an appreciation of contemporary achievement in every walk of life at once cordial, catholic, and, in the best acceptation of the term, "humanistic."

THE VOLUNTARY NOTIFICATION OF SUMMER DIARRHŒA.

AN interesting and instructive experiment in connexion with the control of summer diarrhœa has, on the suggestion of Dr. Sidney Davies, the medical officer of health, been in progress in the borough of Woolwich during the summer quarter of the last four years. During these four years 844 cases of zymotic enteritis were notified and inquired into, and reasons are given for the conclusion that rather more than half the actual cases were notified. As regards the age of the patients it was found that over 50 per cent. were under one year, and more than half the remainder between one and two years. The fatality rate of the cases was 14 per cent. Dr. Davies thinks that it would be erroneous to assume that most of the cases of summer diarrhœa occur among infants, since it was found on inquiry at houses from which cases had been notified that there had been unnotified cases in the same family or houses among older children and adults. Dealing with the cases under one year of age the interesting fact is brought out that as regards the several three months of the year the largest number were aged three to six months, the smallest under three months. Some observations were also made on the general lines laid down in the classical researches of Ballard. It was found that the highest death-rate since 1900 occurred in the year 1904, when the three feet ground thermometer reached the highest weekly average of 64·6° F. It appears, Dr. Davies concludes, from these thermometrical observations that the fact of a high point being once reached by the ground thermometer has more influence on the prevalence of diarrhœa than the maintenance of a high average temperature throughout the quarter, and he thinks that this suggests either that a sufficiently high temperature having been reached the infection continues to multiply outside the body even after the temperature falls, or, the infection having once been prevalent, it multiplies independently of the temperature; and on the whole he leans to the latter view. The investigations made as the result of the notifications brought out some interesting points, at any rate as regards the conditions obtaining in Woolwich. Between one-fourth to one-fifth of the notified cases under one year of age were fed wholly or partially at the breast and one-eleventh of them wholly at the breast. Now, as apparently some 80 per cent. of all the children in the borough are fed at the breast, it was to have been expected on this basis that the number of notified cases of diarrhœa found to have been breast-fed would have been very much larger. It is clear, therefore, that breast-feeding affords very great protection. Although the number of children who obtained milk from the milk depôt was very small, the figures, so far as they go, furnish an argument in favour of depôt milk. Of the total number of cases notified 406 had been weaned before the proper time. In 70 of these cases the death or illness of the mother prevented suckling; in 251 cases there was failure of milk. It is of interest to note that in only 18 cases did the occupation of the mother deprive the child of its natural food. Some of the facts collected point to personal infection in the family and some, it is thought, to spread from one house to another, the spot maps indicating marked grouping of cases as well as some tendency for the disease to spread more on one side of a street and from the back of houses in one street to the adjoining backs in the next street. Dr. Davies evidently regards flies as probably important carriers of infection. It was found, too, as regards locality, that the districts with the highest diarrhœa incidence were those at the lowest levels, and Dr. Davies regards it as improbable that this fact can be entirely explained away by the circumstances that the poorer class of population is usually found at the lower levels. Dealing with the results of notification, Dr. Davies points out that whereas in the four years 1901–04 the death-rate from diarrhœa was slightly higher in Woolwich than in London, in the last four years during which notification has been practised the Woolwich rate has been markedly lower. Although he does not attribute the whole of this difference to notification and the steps taken thereon by the female sanitary inspectors, he points out that without notification the work of these inspectors in this connexion would have been impossible, and he advises continuance of such notification and its extension in time to the months of June and October. The report is a valuable one, and we should like to see a similar experiment conducted elsewhere as a matter of comparison and contrast. But it is obvious that the advice and help of the educated to the uneducated must reduce the death-rate from a malady which depends largely upon ignorance.

THE DUTIES OF A MEDICAL OFFICER OF HEALTH.

THE Aberdare urban district council has recently been discussing the duties of Dr. M. J. Rees, its medical officer of health, certain of the councillors having apparently selected the occasion of his reappointment as a fitting opportunity for increasing his duties or perhaps compelling him to resign. It was seriously proposed that Dr. Rees should be reappointed subject to the conditions that he should periodically examine the milk supplied to the town, whether by local or outside vendors, and, more remarkable still, that he should convert himself into a veterinary surgeon and "make a periodical inspection of the cows that supplied milk in the district." But, absurd as these proposals are, there is, we gather from the *Aberdare and Mountain Ash Weekly Post* of March 13th, something worse proposed for Dr. Rees, since one of the councillors wished to know "if it were possible to distinguish tuberculous milk by *tasting*." Imagine the medical officer of health, with all the knowledge possessed by a perusal of the reports of the Royal Commission on Tuberculosis as to the amount of tuberculosis due to the consumption of tuberculous milk, being compelled to test by tasting whether the Aberdare milk was tuberculous or not. Dr.

Rees naturally protested against the whole proposal and he quite correctly pointed out that the duty of actually analysing foods did not rest upon him, but that there was a public analyst appointed for this specific purpose. All the duties imposed upon him were to examine food, to ascertain whether it was on inspection fresh or wholesome, whether it should be forthwith condemned, or whether it should be submitted to experts for chemical and bacteriological examination. He also pointed out that in order to determine whether milk was tuberculous it would be necessary to make inoculation experiments upon guinea-pigs, and that for this purpose he would require a special vivisection licence. But notwithstanding these very proper explanations the subject of the duties of the medical officer of health was referred to a committee. The deliberations of this committee should not occupy it for a very long period, since the specific duties of a medical officer of health are definitely laid down in the Local Government Board's Order of 1891. It is clearly no part of Dr. Rees's duty either to analyse milk or to inspect the cattle for tuberculosis, any more than he is required to risk his life by tasting milk to determine whether it is tuberculous. The district council is quite right to wish to have its milk periodically tested and to have the cows supplying such milk examined, but there is a duly provided machinery by means of which each of these things may be properly carried out. There has no doubt been some misunderstanding on the part of certain members of the council if the report of the proceedings which has been sent to us is correct, but we feel sure that the committee appointed, after it has gone into the subject, will at once recognise the fact that there are already existing arrangements by which foods may be analysed and cattle inspected.

"OUR BLEACHED DAILY BREAD."

WE return to this subject, which we dealt with in an annotation in our issue last week, since according to the results of a recent investigation the matter is more serious than we had believed. In the *Chemical News* of March 19th a paper on "Chemically Treated Flours," by Mr. E. F. Ladd and Mr. H. L. White, is published, which formed a special bulletin communicated from the Government Agricultural Experiment Station at North Dakota to the Secretary of Agriculture at Washington. According to these investigators there are produced in flour as the results of artificial bleaching by nitrous acid toxic bodies related most probably to diazo-compounds which, generally speaking, are exceedingly poisonous. Evidence was also clear that the gluten or protein of the flour had been acted on. Extracts made from unbleached flour and given to rabbits did not affect them unfavourably, while extracts similarly prepared from commercially bleached flour caused their death within a few hours. Aqueous extracts of bleached flour caused immediate collapse and death even after the extracts were neutralised with sodium bicarbonate. It is assumed that the death of the rabbits was due to the presence of toxic material other than that of nitrites. In view of these results we were justified in writing as we did that "such tampering with 'the staff of life' should be made illegal." We gather that the Agricultural Department at Washington has, through its secretary, expressed the opinion that flour bleached by nitrogen peroxide is an adulterated product under the Food and Drugs Act of June 30th, 1906, but the legislature there does not undertake to prevent the practice applied to flours intended for export unless the method of treatment is in conflict with the laws of the foreign country to which the article is intended to be shipped. Our advice to the public to abandon the fallacious notion that the whiteness of a bread is a mark of its quality needs in the face of the results just quoted to be put in the form of a serious warning. A few years ago surgeons were looking round for some explanation as to the progressive causation of appendicitis, and the idea gained ground in the minds of several authorities on the subject that the introduction of new milling processes had added mechanical impurities to the bread in the shape perhaps of steel particles, or perhaps modern milling methods had rendered the gluten hard and indigestible enough to serve as irritants in the intestinal tract. We may, with some reason, consider whether, if bread is at all a factor in the case, its treatment with nitrous fumes is not calculated to supply a better theory than steel particles. It is, at any rate, a significant fact that in the experiments referred to it was found on post-mortem examination that the walls of the stomach of each rabbit were either perforated or showed degeneration or congestion.

A TESTIMONIAL TO SIR FELIX SEMON.

A MEETING of laryngologists was held at the rooms of the Royal Society of Medicine on March 5th to organise a testimonial to Sir Felix Semon on the occasion of his retirement from practice, which takes place at the end of the coming June. Mr. H. T. Butlin was unanimously elected chairman of the general committee, and Dr. J. Dundas Grant, President of the Laryngological Section of the Royal Society of Medicine, was elected chairman of the executive committee, which consists also of the following: Mr. Charters J. Symonds, Mr. E. Cresswell Baber, Dr. J. B. Ball, Dr. Edward Law, Dr. P. McBride, Mr. Herbert Tilley, Mr. E. B. Waggett, Dr. A. W. Sandford, Dr. F. de Havilland Hall, Dr. R. H. Scanes Spicer, Dr. StClair Thomson (honorary treasurer, 28, Queen Anne-street, London, W.), Dr. P. Watson Williams (honorary secretary, 4, Clifton Park, Bristol), and Dr. H. J. Davis (honorary secretary, 8, Portman-street, London, W.). Subscriptions to the testimonial may be forwarded to the honorary treasurer.

THE METROPOLITAN WATER-SUPPLY.

THE report upon the condition of the London water-supply for November, 1908, has only been issued during the present month and we must repeat our previously expressed conviction that an earlier publication of a report requiring less elaboration would be of more service to the community. If a summary report could be issued in the month following that to which it referred the publication of the many pages of analytical details might well be issued in quarterly reports only for the purposes of record and for the information of experts. We feel sure that such a short and early review of the state of the London water-supply month by month would be welcome to many sanitarians, but we make this suggestion without any disparagement of the admirable and laborious work carried on by Dr. A. C. Houston and his staff in the Metropolitan Water Board's laboratories, work which has already borne practical fruit in two reports on research work and which bids fair to put the bacteriology of bacillus coli in its relation to the water-supply on a throughly trustworthy basis. The report before us shows the supply in November last to have been in a satisfactory condition, both as regards the chemical purity of the filtered water and its comparative freedom from bacterial contamination. An addendum contains a summary of the analyses made during the autumn quarter and a comparison of them with those of the earlier months of 1908. We find that during September, October, and November 86·8 per cent. of samples of filtered water taken from the Thames, Lea, and New River, each of 100 cubic centimetres, yielded no bacillus coli, the corresponding percentages for the spring and summer

quarters of the year having been 91·9 and 84·9 per cent. respectively. Of the autumn samples which did contain this bacillus 9·9 per cent. were of 100 cubic centimetres, 2·7 were of 10 cubic centimetres, and the remainder of 1 cubic centimetre, no smaller samples yielding any growth under the tests which we have previously mentioned. We note in this report a series of experiments that led Dr. Houston to consider that the use of a glucose primary medium gives more accurate results than that of a primary lactose test. An interesting table records the number of typical bacillus coli found per 100 of coli-like microbes of all sorts. In raw Thames waters the proportion is 75·3 per cent., in filtered Thames waters it is only 33·3 per cent., whereas the corresponding figures for the New River are 79·3 and 60·9 respectively. The chemical results call for no special note, but we may add that in the spring quarter 16,125·2 million gallons were taken from the Thames and Lea by the Water Board, against 18,190·2 million gallons in the summer and 16,744·8 in the autumn quarters. The population supplied in November in all the districts amounted to 7,029,807 persons who received an average of 30·37 gallons daily, 97·4 per cent. of their premises being served with a constant supply.

POISONING BY HONEYSUCKLE.

CASES of poisoning by the flowers or berries of *Lonicera xylosteum* (flag honeysuckle), though not very frequent, are by no means unknown, having been described by Buzorini, Jahn, and Blattmann many years ago. The last named mentioned drowsiness, vomiting, determination of blood to the chest and head, deep sleep with half-opened eyes, and rapid breathing and pulse as the symptoms produced. He carried out some experiments on young rabbits and found that the fresh leaves of *Lonicera xylosteum* induced death in the course of a few hours but that berries which had been picked five days previously produced no effect, so that the poisonous substance is probably of a volatile nature. Dr. Olav Hanssen of Christiania has recently published[1] in the *Nordiskt Medicinskt Arkiv* a case occurring in the practice of Dr. Engh of Volden, in which a little boy two years old was poisoned by the flowers of *Lonicera periclymenum* (common honeysuckle). The child, after being in the garden playing with the flowers, became tired and drowsy and then complained of thirst. Clonic spasms and opisthotonos occurred and then diarrhœa, some of the flowers being found in the evacuations. The eyes were calm and steady but set, the face was first red and then livid, and the pulse and respiration were very rapid. When the spasms abated profuse perspiration occurred, after which the child fell asleep. He made a good recovery, but was peevish and inert for some days. Various kinds of lonicera have been used medicinally as diuretics and diaphoretics under the name of *fleurs de chèvrefeuilles* (the natural order is caprifoliaceæ), and it is well that it should be known that some of the varieties at all events are far from harmless. Perhaps, too, as Dr. Blattmann found, they are specially dangerous when freshly picked.

THE HISTORY OF THE MEDICINAL EARTHS AND OF CATAPLASMA KAOLINI.

THE front page of the "Dispensatory" published in 1564 by Valerius Cordus bore as a motto the following quotation from Horace: "*Multa renascentur, quae jam cecidere; cadentque, quae nunc sunt in honore.*" In illustration of the application of the first part of this quotation to our modern materia medica, it is of interest to refer to a sketch by Dr. Hermann Schelenz of the history of the medicinal earths and of cataplasma kaolini given in the *American Journal of Pharmacy* for March. Dr. Schelenz shows that the natural earths, consisting chiefly of aluminium silicate, were used in the form of powder or made into a paste with water or oil by Dioscorides, Galen, and other early physicians, and that the use of such pastes has been revived within the past few years by the introduction of cataplasma kaolini or clay poultice. Several varieties of argillaceous earth were described under the generic name "terræ" by Dioscorides, and he stated that they possessed cooling, astringent, absorbent, and preservative properties. Thus the "earth of Samos" was considered to be an excellent powder for the absorption of perspiration, and when mixed with rose-water and rose ointment it was recommended for inflamed breasts and testicles. Fullers' earth was described under the name "terra cimoliae" in "Liber Fundamentorum Pharmacologiæ," the oldest Persian book on materia medica, which was written by the Persian physician, Abu Mansur Muwaffak. Armenian bole, an impure aluminium silicate containing iron, was official in the Pharmacopée Française up to 1908, and was an ingredient of a plaster, emplastrum ceroneum. A sample of kaolin, the purest natural aluminium silicate, was contained in the museum of Olaus Wormius, of Leyden, in 1606. There is abundant evidence that the laity, through family recipes which were handed down, used the different earths for centuries in the form of clay poultices or dry powder in cases of bees' stings, ulcers, sores, eczema, and all kinds of inflammation. In recent times similar clay poultices have been prepared with the addition of glycerine, boric acid, thymol, methyl salicylate, and oil of peppermint, and of these some have been placed before the profession and the public under fantastic trade-mark names as new and original preparations, demanding a high degree of skill in their manufacture.

OFFICIAL MEDICAL REPORTS IN RELATION TO PROFESSIONAL SECRECY.

THE effrontery of some men who have, or fancy they have, a claim for compensation from employers or assurance companies is quite as great an evil in continental countries as with ourselves, and a case in point which has just occurred in France is reported in *La Semaine Médicale* of March 17th. A working man who had met with an accident made a claim for compensation upon which the court before adjudication appointed a medical man to report. This gentleman in his capacity of official expert adviser to the court visited the patient and made his report, the result being that the court disallowed the claim of the injured man. The latter, thinking to get something out of the affair, commenced an action against the medical expert for 2000 francs on account of defamation of character involved in his contravention of the law of professional secrecy. The facts of the case were that the medical expert, finding that the man complained of various indefinite pains and symptoms which did not appear to be connected with the accident, thoroughly overhauled him and found him suffering from gonorrhœa, which, of course, he mentioned in his report. The case was decided, as we should have expected, in favour of the medical practitioner, and this decision was upheld by the superior court of appeal at Grenoble, the grounds of the decision being that the penal code only punishes those who voluntarily reveal a secret of which they are cognisant in consequence of their professional duties and when they are fully aware that in revealing it they are betraying a confidence. In this case the court ordered a report after examination, to which examination the claimant tacitly agreed by the very fact of appearing before the tribunal, and

[1] Nordiskt Medicinskt Arkiv, 1908, Haft 3, No. 14.

the official expert could not have done anything else than report the facts and his opinion to the court. There was no allegation that he published his report to any other person. Even had the medical man been quite wrong in his view of the connexion of the symptoms complained of with the disease, his report was confidential and in no way laid him open to the charge of violation of professional secrecy. The workman was mulcted in costs, but it is to be feared that that will not be of much assistance to the medical man.

INTERNATIONAL VITAL STATISTICS.

IN the course of the week before last there were asked in the House of Commons certain questions which, had they been differently worded, might have led to the diffusion of useful information respecting the incidence of mortality in various parts of Europe. Mr. Lyulph Stanley asked the Under Secretary of State for Foreign Affairs whether he could state the death-rate per 1000 in England and Wales, France, and Germany respectively, and also the respective rates in London, Berlin, and Paris. He further asked for the percentage of infants dying within a year of their birth in the above-mentioned countries and cities. Mr. McKinnon Wood stated in reply that in the year 1907 the death-rates for England, France, and Germany were 15·0, 20·2, and 18·9 per 1000 living, and those for London, Paris, and Berlin 14·6, 18·5, and 15·4 respectively. Infantile mortality was stated as 11·8 per cent. for England, 14·3 for France (in 1906), and 17·6 for the German Empire. In Berlin infantile mortality was highest, viz., 16·3 per cent., and lowest, 10·5 per cent., in Paris, against a rate of 11·6 per cent. in London. Presumably these figures were supplied on the authority of the Registrar-General, although no acknowledgment to that effect appears in Mr. McKinnon Wood's statement. But anyone who has perused the Registrar-General's Annual Summary for 1907 will be cautious against placing implicit reliance on the figures thus furnished to the House of Commons. Referring to the document above mentioned, we note that readers are warned against comparing the death-rate of one city with that of another on the basis of the crude death-rates there given, because these rates are necessarily uncorrected for differences of age and sex in the several populations for want of the necessary particulars as to the ages of the living and the dying. A further important fact may be learnt from the summary, although this was not communicated to the House of Commons—namely, that whereas in the last quarter of a century the death-rate of Paris has decreased by 26 per cent., and that of Berlin by as much as 36 per cent., the decrease has not exceeded 21 per cent. in the English metropolis.

A METHOD FOR STAINING THE SPIROCHÆTA PALLIDA IN TISSUES.

AFTER the discovery of the spirochæta pallida and its relation to syphilis by Schaudinn and Hoffmann its presence in syphilitic tissues was first demonstrated by Bertarelli, Volpino, and Bovero, who employed the silver impregnation method introduced by van Ermengem for staining the flagella of bacteria. Later Levaditi obtained much better results by using the method employed by Ramon-y-Cajal for nerve fibrils and subsequently he introduced another silver reduction method called the pyridin process. Dr. J. Yamamoto, working in the Pathological Institute of Berlin, has employed these various methods and discusses their relative value in a paper published in the *Centralblatt für Allgemeine Pathologie und Pathologische Anatomie* of Feb. 27th. He states that the original method of Levaditi gives the best results, but that it suffers from the disadvantage that the tissues become stained by the silver as well as the spirochætæ. He has worked out a modification of the silver nitrate method which he claims is free from this disadvantage. The tissue to be investigated may be preserved in various solutions and is then cut into small pieces ten millimetres long and five millimetres in thickness and breadth. These are washed free from the fixing medium by rinsing in water for 24 hours and finally in distilled water for one hour. Each piece is then put into ten cubic centimetres of a 5 per cent. solution of silver nitrate in brown-coloured bottles and kept at 37° C. for 48 hours. At the end of this time they are placed in a reducing solution containing 2 per cent. of pyrogallic acid and 1 per cent. of tannic acid in distilled water in similar brown bottles, in which they are kept for 24 hours at 37° C. It is, however, necessary to change this solution after the first half hour since it is rendered turbid by the reduction. After this the pieces of tissue are placed in water for an hour and then washed in alcohol of increasing strength until decolourised; they are then imbedded in paraffin or celloidin, the latter giving better results. If it is desired to counterstain the tissues, the sections should be dipped in Löffler's methylene blue solution for a second. The celloidin is removed in the usual way and the specimen cleared by oil of origanum instead of by xylol and then mounted in Canada balsam.

T.R.H. the Prince and Princess of Wales have been continuing their tour of inspection of the principal London hospitals, University College Hospital and Middlesex Hospital having been the objects of their recent surprise visits. In each case they inspected the laboratories and scientific departments attached to the institutions, taking especial interest in the physiological laboratories at University College Medical School and the cancer research laboratories at the Middlesex Hospital.

THE sympathy of the whole profession will be extended to the President of the Royal College of Physicians of London on the death of Lady Douglas Powell, which occurred on March 18th. The funeral service was held at Beckenham Parish Church on March 22nd, and the burial subsequently took place in the cemetery at Elmers End.

THE report of the Departmental Committee on the ambulance service in the metropolis has been presented to both Houses of Parliament, and the recommendations should certainly to a great extent meet the grave deficiency of the present arrangements for dealing with accidents and illness in streets and public places in London.

THE Earl of Rosebery, Chancellor of the University of London, has reappointed Professor Sir John Williams, LL.D., D.Sc., to be his representative on the court of governors of the University College of South Wales and Monmouthshire for another period of five years.

A TELEGRAM from the Governor of Hong-Kong to the Secretary of State for the Colonies states that 1 case of plague was reported during the week ending March 20th and that the number of deaths during that week was 5.

THE Cavendish lecture of the West London Medico-Chirurgical Society will be given by Sir Victor Horsley on Friday, June 25th, at the Kensington Town-hall at 8.15 P.M., the subject being "The Cerebellum."

THE new Procurator of the Holy Synod of the Russian Church is an eminent medical man, Senator Lukyanoff, the well-known pathologist of St. Petersburg.

MOTORING NOTES.

BY C. T. W. HIRSCH, M.R.C.S. ENG., L.R.C.P. LOND.

THE AERO CLUB EXHIBITION AT OLYMPIA.

THE recent accounts from Pau of the facility with which Mr. Wright's pupils can manipulate his aeroplane must have been additional inducement to the public to visit the Aero Club Exhibition which opened at Olympia, Kensington, on March 19th. Certainly it was most interesting, though the majority of machines for aerial flight on exhibition have not yet left the ground. Still the success that has been obtained may ultimately justify Dr. Johnson's statement in "Rasselas": "I have long been of opinion that, instead of the tardy conveyance of ships and chariots, man might use the swifter migration of wings." The one machine which has made a successful flight is the biplane of Mr. Moore-Brabazon, which has a single propeller driven by a 80-h.p. motor. Captain Windham's biplane has two propellers. Among others of this type which are worthy of mention are those of Mr. Howard Wright and Mr. Delagrange. A monoplane which, if successful, might appeal to the profession is the Weiss. In this the automatic balance is obtained by specially shaping the planes and making the front edge stiff and the rear edge flexible. The weight with aeronaut complete is 500 pounds, the span is 34 feet, and it is driven by a 12-h.p. engine. The steering is by two small rear flaps, and the lifting power was shown by a 12 pound weight model which could easily lift a 16 pound weight. As the Prince of Teck remarked at the inaugural luncheon, this exhibition foreshadowed tremendous expansive possibilities; still I fear that aviation will have to advance a little further before it will, at any rate with medical men, seriously compete with the motor-car for professional visiting.

MOTORING NOTES: THE QUESTION OF REPAIRS.

A car at the last Olympia show which seemed worthy of the consideration of the doctor motorist was the Sizaire-Naudin, a Paris-made automobile, which is sold by Messrs. Charles Jarrott and Letts of 45, Great Marlborough-street, London, W. In my article on the show published in THE LANCET of Nov. 28th last I had only space very briefly to refer to it. As it struck me as an ideal mount I was very pleased when Mr. Jarrott wrote inviting me to test it.

For those living in town it is difficult to find a good route where, without going a long distance, a modern car may be adequately tested, but this car was sent down to me at Woolwich, and in that district there are a few hills with a gradient of 1 in 6, which is a fair test for the ordinary geared motor. With a cautious driver at the wheel I was piloted without non-skids over the greasy tramlines, stopping when necessary at patients' houses, then in and out the busy lower Woolwich road, by the Royal Arsenal, and through crowded Beresford-square. I thus had a good opportunity of seeing how easily and smoothly this single cylinder car could be driven on top speeds through the traffic, and then still on top gear we ran up a hill of 1 in 15, which the car took quite easily. Stopping at the Woolwich and Plumstead Cottage Hospital on Shooter's Hill I took over the wheel myself and found the car both simple and easy to drive, and though a stranger to the make, even in my unaccustomed hands we pulled well up the long and none too easy gradient, the low speed not being required. I found the metal-to-metal clutch hold with delightful smoothness and the all-direct drive change speed gears engaged with perfect ease and silence. Descending by the rough Shrewsbury-lane and by a half-finished road to Plum-lane, I had good proof that the long inverted elliptic half springs, fixed to brackets on the sleeves of the driving axle and to the sides of the armoured wood frame, with the special front transverse spring suspension, gave a luxurious and comfortable suspension even over very bad roads. To my mind there can be no doubt that half elliptic springs, made long enough, like those on this car, are all that is needed to give immunity from road shocks. The only criticism I venture to make is that I should like to see some provision for lubricating the spring plates; holes with covers, and so made that oil which is squirted in runs between the plates, would, I suggest, be an improvement. One good feature is that arrangements are made for lubrication of the shackle pins. The single inverted semi-elliptic transverse front spring may at this point perhaps be described, as it is orginal and worthy of especial notice. To the centre of the spring is fixed the cross member of the front of the chassis, and the ends of this H section bar are bored to take the vertical steering rods, and on the top of these rest the ends of the spring; thus each wheel is free to rise independently of the other.

I took the car up Willenhall-road, a hill of 1 in almost 5½, that comes off sharply at right angles from Brook Hill-road, and so cannot be rushed. Single though this engine is, it mounted this severe hill without much noise and certainly without fuss of any kind, demonstrating that this type of single cylinder gives off all the power necessary, and that for conduct it had all that could be desired, even in a four cylinder. On this road, too, I was able to test the three double-acting internal expanding metal-to-metal brakes. Personally I am indifferent to the kind of brake, and as to whether it is internal or external expanding; the only point I am keen on is that it acts and that it can be easily adjusted. On this car I found both the one on the differential drum and the pair on the rear road wheels easily to hold the car in either direction on a severe hill, while easy means for adjustment was provided. More cannot be required.

I recently came across a medical motorist who had a grievance. He had a car and kept a driver, having his repairs done by a repairer. He had a big practice and did not bother about his car, provided it did his work, and he wanted me to give an opinion on the repairer's little or rather big bill. Well, it was after the repairs had been done, so it was really impossible to say what had been done and if the various adjustments, replacements, and alterations had been needful. Personally I advocate doing these oneself; still, if time or inclination does not allow, I would suggest that work should not be given out without an estimate of the probable cost. Then the owner will know what it is suggested should be done and the price, and if he thinks it heavy, well, there are plenty of repairers and another estimate can be obtained. This method will anyway avoid the source of complaint of the colleague who consulted me.

Speaking of repairs reminds me of piston rings; they are as a rule most patient and long-suffering parts of a car. If the oil but reaches them and they occasionally get washed with paraffin they last for many a year. Some men are so keen on saying, directly their car pulls badly, "Of course, worn piston rings"; they think new ones will speedily cure the fault. I think when the starting handle pulls round too easily that the valves are more often at fault, or, if the power is poor, that it is the ignition rather than the persevering rings. So in such cases I suggest that the inlet and exhaust valves be first inspected and if needful ground in; also, if the combustion head be detachable, that its joint with the cylinder be inspected, and if this is found to be gas-tight, the accumulators should be tested to see that they show four volts, and the sparking-plugs be examined to see that they are clean, and if they are, the fault may be with the commutator. The wipes may be worn out of the true with the ring. These points should certainly be eliminated before deciding on taking the cylinder covers off. But having settled to do this operation, it is desirable to do it thoroughly, only first try squirting paraffin through the compression taps. Dried oil and gummed piston rings may account for the flown-away power; if so, pulling the engine round after introducing paraffin will cure the trouble. Having removed the covers, breaking such water joints as must be disturbed, and displacing the inlet and exhaust pipes, electric leads, &c., the pistons and crank case will be exposed. As this should not often be required, when it is done it is as well to do the job thoroughly. The covers should be cleaned out, and the combustion will probably contain a considerable amount of adherent soot that will take a lot of scraping to remove; of course, the part where the piston works will be smooth and should not be touched unless it is found on measuring with the internal callipers to have worn oval, and if that is so it is well to get further advice; lapping of a cylinder is for an amateur rather a big undertaking. It can be done on a large power-driven lathe by casting a lead lap, and then fixing the cylinder perfectly true on the face-plate, and working the lap through with some very fine emery, such as No. 220, mixed with a little oil on the lap, and finishing with rouge powder, but this is not as easily done as it is described. The best plan, if the cylinders are

really badly worn, is to get a good engineer to make them true with a grinding wheel. Some firms make a speciality of this, using a little carborundum wheel which revolves at 6000 revolutions per minute, and, taking but a cut of 0·001 inch, travels down the bore. The operation can be stopped directly the cylinder interior is parallel and true. The Laystall Engineering Company of London and Messrs. Dorwald, I believe, specialise in this class of work. It is well to remember that if much is taken off new pistons and rings may be required.

While the cover is off, if it is cast in one with the water jacket, the water jacket should be cleaned. This can be done by blowing steam through; generally the engineer at one of the public baths will, if nicely approached, do it off one of his boilers, and even if only distilled water is employed grease from the pump gets into the jacket, which is all the better for a cleaning of this kind. The piston heads should be systematically scraped, care being taken that the scrapings do not fall into the crank case. The rings should also be taken off, so that the grooves in which they work can also be cleaned. This requires care, as they are as a rule made of cast iron and turned slightly eccentric. The dodge is to gently lever out one end of a ring near its gap, then insert the blade of a knife or a piece of tin, and carry it round the piston; if needful two pieces of tin may be employed. The piston grooves should then be scraped and cleaned, and if the rings are found to be worn new ones can be sprung on. To do this slightly open the ring with the thumb and index finger of each hand, slip over the piston and over each groove, until over the correct one, and then spring it in. How much to open the ring will soon be learnt, though in acquiring the knowledge a ring or two may be rendered *hors de combat*. The new rings should move easily round in their grooves and if they do not they should be taken off and filed until they do. They are usually sent out the correct size, but not always the proper width; to test that they are the proper circumference they can be sprung in the cover without the piston, and when in position it should be possible to just slip in a visiting card between the ends. Some rings have scarfed, some butted, ends, and when replacing a cover it is most important to make sure that the gaps are not in line; where three are employed the gap of each should be one-third of the circumference from that of the next. A very common cause of loss of power is due to the gaps working into line with one another. On some engines like the old Wolseley this is avoided by employing butted rings and preventing movement by little pegs screwed into the piston, the ring ends being recessed to receive the pegs.

While the covers are oft it is as well also to examine the big and small connecting rod ends where there should not be any up-and-down movement. On most cars the gudgeon is a drive fit and is carried in lugs cast on the inside walls of the piston. The gudgeon pin ends are cut lengthwise and the bosses are tapped to receive a tapered screw, which passes through the cut in the gudgeon, and so spreads out the ends of the pin, which is thus fixed. On some engines, like the White and Poppe, an extra ring is sprung round the piston outside the gudgeon, which is in that way kept in its place. The pin is, of course, hardened and passes through a hole in the top of the connecting rod and this hole is bushed either with gun metal or manganese bronze, proper provision being made for the lubrication of this bearing. If there is any play a new bush may be needed, to fit which will mean driving out the gudgeon and turning up in the lathe a new bush. If this is done care should be taken to file an oil way in the bush and to take off the burr made in cutting the oil way. The connecting rod big ends are, as a rule, in halves, and if they have worn a bit oval they can be taken down, dressed with a file while held in the vice, and replaced; care should be exercised that they do not bind. Those who are not accustomed to the file should, anyway, on their first attempt get a mechanic in to help. The crank bearings should likewise be felt, but adjustment of those important parts is a very big undertaking, as it necessitates the taking down of the crank case. Another form of gudgeon is the one used on the Wolseley cars. The connecting rod in these is forged with a T end, which end forms the gudgeon, and is carried by two eye bolts, screwed and bolted into the head of the piston. In this form the nuts are further secured by burring the ends of the eye bolts over.

Recently while running down to Bexhill I came across a fellow motorist who had a puncture. I stopped. My only reason in referring to the incident is that I noticed that the spare inner tubes were kept loose, under the seat, with the jack and pump quite handy to injure them. In fact, in the case in question the first tube we found was useless as a result of being so carried. In case some have not thought of it I may point out that inner tubes are best carried folded up and wrapped in brown paper. After rolling the tube, with the valve out, the valve can be replaced, a rubber finger stall being slipped over the valve cap, which will obviate the possibility of the cap injuring the tube; then placing the tube flat on the table, with the valve uppermost, the two ends are brought to the centre, and are merely kept apart from one another by the valve; then folding them over once more a neat small packet is made, which can be kept together by a couple of rubber bands, and then done up in brown paper and stowed in a convenient place in the car. I believe this will be found an excellent method of carrying spare tubes. Those not carried in the car are best kept blown up in a dark cupboard, and are better for an occasional wipe with a wet sponge.

THE ROYAL COMMISSION ON THE POOR-LAWS AND RELIEF OF DISTRESS.

V.[1]

A VIEW OF THE MINORITY REPORT.

THE keynote to the recommendations of the Minority Report, in so far as these would affect the sick poor, and, through them, the medical profession, is to be found in the two consecutive sentences which declare that "beneficiaries must be compelled to obedience, alike in their own and in the public interest," and that "the officers who are placed in direct charge of the beneficiaries must themselves be subject to supervision and discipline." At present, as is only too obvious, neither of these conditions can be said to exist. The beneficiaries, that is to say the poor who are recipients of medical relief, are not only under no compulsion to obey medical injunctions but would often be utterly unable to do so; and the parochial medical officers are left absolutely without any form of skilled supervision, so that they are neither stimulated in case of slackness nor encouraged by the recognition of work of the highest excellence. The authority once exercised over them by boards of guardians was exercised so ignorantly and capriciously that it was withdrawn, and the tenure of office during good behaviour which now exists leaves the officer at liberty to range between rather wide limits of efficiency or inefficiency without any prospect either of receiving praise or of incurring censure. In these circumstances, it is eminently satisfactory to read that, in the opinion of the signatories of the Minority Report, the various complaints concerning district medical officers which have come before them do less than justice to the gentlemen concerned. The report bears testimony to their "personal kindness to the poor" and to "their desire to relieve suffering," and goes on to say that "when we consider the method and amount of their remuneration, and the conditions of their duties, we are impressed with the zeal and devotion displayed, with the humanity shown to the poor, and with the large amount of unpaid, unrecognised, and unrecorded work performed by them (the medical officers) as a class." This is high praise, and we believe it to be thoroughly well deserved, but we are none the less compelled to admit the truth of the sentences which follow it. "In too many unions, it is clear, outdoor medical relief begins and ends with a bottle of medicine; and, in the twentieth century, we have ceased to believe in the bottle of medicine. It is not regarded as any part of the duty of the medical officer to insist on, or even to inculcate, the personal habits necessary to recovery. Under the Poor-law there is practically no sanitary supervision of phthisis in the home of the patient. Phthisis cases are maintained in crowded unventilated houses. Diabetes cases live on the rates and eat what they please. Infirm men and women supported by the Poor-law are allowed to dwell in

[1] Nos. I., II., III., and IV. were published in THE LANCET of Feb. 27th (p. 638), March 6th (p. 706), 13th (p. 782), and 20th (p. 859), 1909, respectively.

conditions of the utmost personal and domestic uncleanliness." The indictment is a serious one, but we fear it would not be possible to question its substantial accuracy.

A sick pauper is a phenomenon which has been regarded at different times from very different points of view. Until comparatively recently he was looked upon by the public chiefly as an object of compassion, and by officials chiefly as a troublesome person who had to be endured, but whom it was hopeless to endeavour to deal with by other than palliative measures. In the present day, although his claims upon compassion were never more actively recognised, he presents himself to those capable of understanding the medical view in the light of a public danger, which to some extent is capable of being obviated; and we have come fully to recognise that his existence in our midst is not only a great source of unremunerative expenditure, but also that, like a stone cast into water, he is surrounded by an ever-widening circle of possible disaster. His dirt, his parasites, his infectiveness, his example, are all of them things which are liable to diffusion throughout his environment, and hence it has become one of the pressing problems of our day how best to minimise his influence and to check his multiplication. He is so far an inevitable survival that the avoidance of many of the more manifest causes of his diseases would have required an amount of knowledge which has never been imparted to him and an expenditure which it could never have been within his means to compass, and to this extent he is a legacy from the errors of generations not far removed from our own. The Factory Acts for which Lord Shaftesbury was mainly responsible were the expressions of a revolt of common sense and humanity against the commercialism by which the poor were then being treated as workers from whom the last ounce was to be extracted before they were suffered to escape from the thraldom under which they were condemned to live; and the conditions which those Acts were framed to modify have been mainly responsible for the creation of the slum population which abounds in so many of our great cities, and which lingers even in more favoured localities; a population indifferent to knowledge, careless of dirt, ignorant of the causes of the misery in which they live and die, and among whom the chief manifestation of vitality is in the unchecked reproduction of creatures like themselves, largely doomed, indeed, to perish before they attain maturity, but displaying a desperate natural effort to save from absolute extinction the unsavoury types of which they are examples.

Even if the education of the poor during the last 30 or 40 years had been directed with steady reference to their real deficiencies and requirements, and with the object of imparting to them the principles of health, of conduct, and of domestic economy, the present position would not have been altogether avoided. Even if girls, instead of being occupied with the acquisition of unnecessary information, had been taught to wash a room and a baby, and the importance of washing them well; if boys had been taught the manual dexterity which always reacts upon brain development and quickens intelligence, the problem of dealing with sickness among the poor in such a manner as not only to save the lives and the capacities of the actual sufferers, but also to minimise the risks incurred by other members of the community, would have been one of no small complexity and difficulty. Even so the difficulties attending the proper care of the sick poor would have been immense, but the ignorance of the population both of the art of life and the technics of trade increases these difficulties vastly. It may be taken for granted that a very large section of the community must always be so near the line of actual poverty as to render "putting by for a rainy day" a practical impossibility for them: and it is equally certain that sickness must always be more expensive than health. Moreover, the expenditure necessary in order to cure or to prevent sickness is constantly growing with the growth of knowledge. The best efforts of the industrial classes at self-help in illness must always, as a rule, fall short of the imperative demand and must require to be supplemented from the general resources of the community, either in the form of gifts to hospitals or similar institutions, or in the form of legalised imposts; and hence it would appear to be well worthy of consideration in what manner the operations of the gifts and of the imposts might be most effectively combined for the production of the greatest happiness of the greatest number, or, in other words, for the most effective methods of dealing with the evils to be encountered. These evils, like the mortality from tuberculosis which may be taken as a typical example of them, are undoubtedly declining; but the rate at which they decline is hardly sufficient to satisfy the demands of an advanced civilisation. In what manner, then, can this rate be accelerated?

The Minority Report which we are now discussing is, we think, justified in the conclusion that the help required by the poorer members of the community, when engaged in a struggle against sickness, should be entirely distinct from the relief afforded to destitution, and that it should not entail, either directly or indirectly, the disgrace or the disqualifications which, generally speaking, must be inseparable from pauperism. We should therefore welcome the proposed transference of the medical service of the sick poor from the destitution authority to the public health authority, and we have no doubt that the position of the medical officers would be materially improved by such a change and by its necessary consequence of rendering them protectors of the general welfare of the community. They would be placed, speaking generally, under the direction of boards or persons better able than the existing boards of guardians to appreciate the value of their services and more disposed to remunerate these services upon a scale approximately commensurate with their value. They would obtain prompt and enlightened support in dealing with epidemics or other exceptional conditions affecting the health of a locality; the parochial medical officers of the present day have, of course, nothing directly to do with epidemiology, but the value of our public health service would be much increased if their experiences were taken into account. There would no longer be any question, in a strong and well-organised national service, of withholding well-earned fees, as for attendance on some pressing emergency, under any of the frivolous pretexts which are now so frequently used in order to justify or excuse such proceedings.

On the other hand, it is manifest that difficulties of a very serious character would arise in connexion with a requirement which the report pronounces to be essential, the requirement that the "beneficiaries must be compelled to obedience." The question put by Dogberry's watchman, "How if a' will not stand?" springs unbidden to the mind, and can scarcely be said to receive any better response in the report than that which Dogberry gave to it. It is proverbially possible to take a horse to the water, and it would also be possible to give instructions of sweet reasonableness to the relatives, neighbours, or custodians of sick persons among the poor. The report seems to contemplate "institutional treatment" for the recalcitrant sick person or for the sick person whose natural caretakers are recalcitrant on his behalf; but it does not so much as sketch the machinery by which the necessary compulsion could be applied. Even if the medical officer were the servant of a "health authority," he could scarcely withdraw his assistance from a sick person who had partaken of forbidden articles of diet or who had neglected precautions which he had been told to observe; nor is it easy to contemplate a state of the law in which a patient could be sentenced to treatment in an "institution" because he had been disobedient to the medical officer when at home. Can we not see defence societies being at once founded against such medical "tyranny" and speedily becoming unions for the promotion of the unchecked diffusion of disease?

The Minority Report[2] does not favour the suggestion of the majority to supersede the present system of medical aid to the poor by some form of officially controlled provident dispensaries, or, as it is described, "by a publicly subsidised system of letting the poor choose their own doctors"; this it declares, sharing our already expressed apprehension that such a system would prove grandmotherly, "would lead to an extravagant expenditure of public funds on popular remedies and 'medical extras' without obtaining either greater regularity of life or more hygienic habits in the patient." On the other hand, it entirely dissents from the proposition that the establishment of a unified medical service on public health lines would necessarily

[2] Under the editorship of Mr. and Mrs. Sidney Webb two convenient octavo volumes have been published—The Break-up of the Poor-law and The Public Organisation of the Labour Market (London: Longmans, Green and Co., 1909, pp. 601 and 345, and prices 7s. 6d. and 5s. respectively)—which contain the Minority Report.

involve the gratuitous medical treatment of all applicants. The signatories make the important and far-reaching admission that, in the public interest, neither the promptitude nor the efficiency of the medical treatment should be in any way limited by considerations of whether the patient can, or should, repay its cost, but they see no reason why Parliament should not embody, in a clear and consistent code, definite rules of chargeability, either relating to the treatment of all diseases or of all but those specifically named, and of recovery of the charge from all patients who are able to pay. This proposal, in the detailed "Scheme of Reform" which forms part of the report, is set forth at considerable length and is summarised in the words "that the law with regard to liability to pay for relief or treatment received, or to contribute towards the maintenance of dependents and other relations, should be embodied in a definite and consistent code, on the basis, in those services for which a charge should be made, of recovering the cost from all those who are really able to pay, and of exempting those who cannot properly do so." The suggestion is altogether admirable upon paper, but it will be difficult to carry it into practice, and attempts to do so might cost much more, in court fees, officials, and so forth, than the total pecuniary result.

The general control of the newly organised public medical service would be vested, according to the recommendations which we are considering, in the health committee of the county or borough council of the district; but the responsibility of obtaining the application of this service to the wants of different classes of the community would vary from time to time, in accordance with the actual status of the person requiring assistance. Thus, the health of the sick and permanently incapacitated, of infants under school age, and of the aged needing institutional care, would be looked after by the health committee; that of children of school age by the education committee; and that of old persons receiving pensions by the pension committee; but the two last-named bodies would discharge their duties in these respects by the intervention of the health committee, or at least by the agency of its officers. It is apparently intended that a single medical officer should suffice for all the requirements of the district to which he was appointed, and that his work should be performed under the general supervision of the chief medical officer of the health committee. We question whether he would not often be in a position of considerable embarrassment arising from the conflicting claims which would be made upon him in relation to the same outbreak of illness, as, for instance, when his employers on the education committee desired a school to be kept open and his employers on the health committee desired it to be closed. If no man can serve two masters, still less can he serve a greater number.

The general tendency of the recommendations of the Minority Report would be materially to improve the status, the conditions of work, and probably the remuneration of the parochial or (as he would then become) the Public Assistance medical officer, and they would enable him very materially to enlarge his sphere of public usefulness. On the other hand, a large proportion of these recommendations seem to us to be ill-adapted to the existing state of public opinion and public ignorance or prejudice, and calculated, if any attempt were made to enforce them, to break down in practice. Every medical practitioner knows that many cases of illness, even occurring in intelligent families of small or even moderate incomes, are constantly neglected for many days, and often until serious or fatal mischief has been done, because the persons who would be responsible for the cost of treatment hesitate to incur that responsibility until the absolute necessity for doing so can no longer be concealed. Among the classes who pay their own medical advisers how many examples of this kind are to be met with every day, or how many cases are treated by quack medicines or by a dose of physic from a neighbouring druggist, until the severity of the illness can no longer be overlooked by the most careless observer? Among families still lower in the social scale, in what proportion of cases would the aid of the Public Assistance medical officer be early invoked, if it were known that an application for his services was liable to be followed by a demand for payment from a committee, enforced wholly or in part at the discretion or on the report of an official of the general type of a relieving officer—although he might be called by some different name? The suggestion that payment should be required, whenever it could be obtained, in the case of persons removed to a public isolation hospital on account of infectious disease seems to be comparatively unobjectionable, because such removals are now ordered by the public health authority, and the cases, except in a few instances, could not be left concealed. In such instances there could be no objection to the proposed intervention of a Registrar of Public Assistance, unconnected with the medical service, and bent on really enforcing whatever charges might be legally imposed on those for whom hospital maintenance had been provided; but the operations of such an official in non-infectious cases would almost certainly lead to much neglect of illness and to many disastrous consequences arising therefrom.

Another difficulty likely to arise would, we conceive, be dependent upon the sort of competition between the "institutions" of the suggested Public Assistance authority and the ordinary hospitals of each district concerned. The county hospital would be likely to maintain its position as a purely eleemosynary establishment, while the persons removed for treatment to the "institution" would be made to pay whatever proportion of the expense incurred could be obtained from them. The natural result would be that no pains would be spared in order to obtain the admission of the sick into a "hospital," so as to prevent them from being sent by authority to a place where payment would be exacted for them. The two establishments would soon be doing the same work, the hospital at the cost of the subscribers, the institution at the cost of the rates; and the inevitable result would be a falling off of subscriptions, probably to a very serious extent. The average man would see no reason for subscribing to the hospital when, as a ratepayer, he was compelled to support another building and staff engaged in supplying the same benefits to the same people. The general decay of hospitals, except such as were connected with medical schools and maintained on account of them, would be an almost inevitable result, and the decay of county and provincial and cottage hospitals could hardly fail to exert a deleterious influence upon the general national standards of medical and surgical skill and efficiency. On all these grounds, therefore, while we welcome the proposals of the Minority Report in so far as these would transfer the control of public medical assistance from the authorities for the relief of destitution to those concerned with the preservation of health, we fear that these proposals in many other of their aspects must be regarded as unpractical.

MEDICINE AND THE LAW.

The Poisons and Pharmacy Act, 1908 (8 Edw. VII., Ch. 55).

THE recently passed Act of Parliament, which after April 1st will "regulate the sale of certain poisonous substances and amend the Pharmacy Acts," deals with important topics; the leading article which we published upon it last week may be supplemented conveniently with a detailed account of the legal modifications brought about by the Act.

1. The new Poisons and Pharmacy Act repeals in its first section Schedule A of the Pharmacy Act, 1868, which specifies the articles to be deemed poisons within the meaning of that Act, and substitutes a fresh schedule. In this Part I. will be found to add to the contents of Part I. of the old Act aconite, aconitine, and their preparations; atropine and its salts and their preparations; belladonna and all preparations or admixtures (except belladonna plasters) containing 0·1 or more per cent. of belladonna alkaloids; coca (any preparation or admixture of coca containing 1 or more per cent. of coca alkaloids); nux vomica and all preparations or admixtures containing 0·2 or more per cent. of strychnine; opium and all preparations or admixtures containing 1 or more per cent. of morphine; picrotoxin. It will be observed that of the above belladonna was included in Part II. of the Schedule of the Act of 1868, and that the definition of minimum proportions of a poisonous ingredient is added in many instances both in this and in Part II. Part II. has now had added to it antimonial wine; cantharides (tincture and all vesicating liquid preparations); carbolic acid, and liquid preparations of carbolic acid and its homologues containing more than 3 per cent. of those substances, except preparations for use as sheep wash

or for any other purpose in agriculture or horticulture, contained in a closed vessel distinctly labelled with the word "poisonous," the name and address of the seller, and a notice of the special purpose for which the preparations are intended; chloral hydrate, coca (any preparation or admixture containing more than 0·1 per cent. but less than 1 per cent. of coca alkaloids), digitalis, mercuric iodide, mercuric sulphocyanide, red precipitate and all oxides of mercury, white precipitate, strophanthus, sulphonal; all preparations or admixtures which are not included in Part I. and contain a poison within the meaning of the Pharmacy Acts, except preparations or admixtures the exclusion of which from the schedule is indicated by the words therein relating to carbolic acid, chloroform, and coca, and except such substances as come within the provisions of Section V. of the new Act, referred to below. The above are now brought within the Pharmacy Act, 1868, by statute, but additions and alterations may still be made as heretofore under Section II. of that Act. 2. It declares that the portions of the Act of 1868 which regulate and restrict the business of persons selling poisons or keeping open shops for their sale shall not apply "in the case of poisonous substances to be used exclusively in agriculture or horticulture for the destruction of insects, fungi or bacteria, or as sheep dips or weed killers which are poisonous by reason of their containing arsenic, tobacco, or the alkaloids of tobacco," if the person selling them or keeping open shop is duly licensed for the purpose by a local authority and conforms to regulations to be made by Order in Council. The local authority in this connexion is to be the borough council of boroughs of more than 10,000 inhabitants, the town councils of Royal, Parliamentary, or police burghs in Scotland, and in other places the county council. 3. Section III., Subsection 1, amends Sections 15 and 16 of the Pharmacy Act, 1868, and imposes on any person "who being a duly registered pharmaceutical chemist or chemist and druggist" carries on business as such the obligation of carrying on the business himself, or through a similarly qualified person, and of having the name and certificate of qualification of the person conducting the business "conspicuously exhibited in the premises." Corresponding conditions are imposed by Subsection 2 upon the personal representatives of a deceased qualified person when carrying on his business after his decease. Subsection 3 permits a "registered chemist or druggist to use the title 'pharmacist.'" Section III., Subsection 4, provides that "a body corporate and in Scotland a firm or partnership may carry on the business of a pharmaceutical chemist or chemist and druggist," provided that its business, so far as it relates to poisons, is under the control and management of a superintendent who is a duly registered pharmaceutical chemist or chemist and druggist, whose name has been forwarded to the registrar under the Pharmacy Act, 1852, to be entered by him in a register to be kept for the purpose, and who does not act in a similar capacity for any other body corporate, firm, or partnership. When the business is not carried on personally by such a superintendent it must be conducted by a manager who must be a "duly registered pharmaceutical chemist or chemist and druggist," and whose certificate of qualification must be conspicuously exhibited in the shop or place where the business is carried on. A body corporate, and in Scotland a firm or partnership, may use the description of chemist and druggist, or either name, or add the word "dispensing" if they carry out the prescribed regulations and if the superintendent is a member of the board of directors in the case of a company, or of the firm or partnership, as the case may be. Subject to these provisions, sections specified of the Pharmacy Acts, 1852 and 1868, are applied to corporate bodies, and in Scotland to firms, as if they were individuals. 4. The power of the Council of the Pharmaceutical Society to make by-laws is increased so as to enable it to make by-laws (*a*) regulating the production of evidence by candidates for examination that they have received a sufficient preliminary practical training; (*b*) providing for the registration without examination of persons holding colonial diplomas or qualified military dispensers, or assistants to apothecaries, subject to the production of satisfactory evidence as to their skill and knowledge; and (*c*) making certain other provisions with regard to examinations. 5. Section V. of the Act forbids the sale retail, except with a label containing its name, the word "poisonous," and the name and address of the seller, and subject further to compliance with regulations to be prescribed by Order in Council, of any of the following substances: sulphuric acid, nitric acid, hydrochloric acid, soluble salts of oxalic acid, and such others as may be added hereafter to the list by Order in Council.[1] Of these provisions the last-named (Section V. of the Act) and that one which we have numbered 2 (Section II. of the Act) apply with appropriate modifications to Ireland, but the rest of the Act does not. 6. With regard, however, to executors, administrators, or trustees of the estates of deceased persons registered under the Pharmacy Acts in Ireland these may (by Section VII.) carry on the business so long as it is conducted by an assistant duly registered.

Does Rupture Incapacitate?

Since the Workmen's Compensation Act was extended to seafarers a large proportion of the claims by sailors and firemen relate to incapacity from rupture trouble, and in Liverpool there has been much controversy in shipping circles as to how far a ruptured man is really incapacitated from following his employment. A case of the kind came before his honour Judge Thomas in the Liverpool county court recently, when Edward Sinnott, marine fireman, 35 years of age, claimed compensation from Allan Brothers, Limited, for injury received while engaged as fireman on board the steamship *Evangeline*, from Liverpool to Halifax, last October. It was stated that while clearing the boiler fires Sinnott overstrained himself and caused a rupture. He remained at work until Halifax was reached, when he was advised that he was totally incapacitated. The shipowners contended that Sinnott was not incapacitated, and called medical evidence that an operation would make the man as good as ever, or the wearing of a properly fitted truss would control the effect of the accident. The applicant's medical evidence agreed to this, but pointed out that the truss would require renewal every eight or nine months, at a cost of about 6*s.* 6*d.*, and the great difficulty of a marine fireman at work retaining the truss in its place, and the danger of more serious trouble, if further rupture occurred. His honour found in favour of the fireman, and awarded compensation at the rate of 16*s.* 1*d.* per week as from Nov. 21st last up to date, and 2*s.* a week hereafter during partial incapacity.

Laryngeal and Facial Ulceration caused by Septic Poisoning.

The question whether laryngeal and facial ulceration caused by septic poisoning is an accident within the meaning of the word in the Workmen's Compensation Act, 1906, came before his honour Judge Ingham at the Evesham county court on Feb. 27th. It arose out of an application made by Mrs. Mawson of Evesham for compensation by reason of the death of her husband, the surveyor to the borough, who was in receipt of a salary of £190, and who died on April 20th, 1908, from laryngeal and facial ulceration caused by septic poisoning. From the evidence it appeared that the deceased man had to supervise the cleaning out of a pond in the recreation ground which had not been cleansed for a long time and gave forth a very bad smell. The contract for the work had been given to a man named Clements. The work commenced on Jan. 14th, 1908, and lasted about three weeks. It was the duty of the deceased to attend on and off for the purpose of measuring the work done in order to calculate the payments due to Clements. A day or two after the work had been commenced the deceased complained to his wife of the smell and of feeling ill. About the same time he fell into the pond up to his knees. His health got steadily worse, and on March 5th, 1908, he consulted a medical man, who attended him until his death. The medical testimony went to show that the deceased's condition was due to virulent micrococci inhaled from some decomposing vegetable and animal matter. It was impossible to fix the exact moment when deceased received the poison into his system, but it would be some time between two months and a fortnight before March 5th, judging by the patient's condition on that day. On behalf of the applicant the following cases were cited: Fenton *v.* Thorley and Co. (1903, A.C. 443); Brinton's Limited *v.* Turvey (L.R., 1905, A.C. 230); and Ismay, Imrie, and Co. *v.* Williamson (L.R., 1908, A.C. 437). In the Fenton case the House of Lords held that the word "accident" in the Workmen's Compensation Act is used in

[1] See the Report of the City Coroner, THE LANCET, March 13th, 1909, p. 775.

the popular and ordinary sense and means a mishap or untoward event not expected or designed. Where a workman employed to turn the wheel of a machine by an act of over-exertion ruptured himself it was held that he suffered an "injury by accident" within the meaning of the Act and was entitled to compensation. In Brinton's case while a workman was employed sorting wool in a factory a bacillus (according to the medical evidence or theory) passed from the wool to the eye of the workman and infected him with anthrax, from which he died. It was held that this was a case of "injury by accident" within the meaning of the Act. In the Ismay, Imrie case a workman in a weak and emaciated condition while raking out ashes from under the boiler in the stokehole of a steamship received a heat-stroke, from the effect of which he died. It was held by the House of Lords that this was a case of death by accident within the meaning of the Workmen's Compensation Act, 1906. But in Broderick *v.* London County Council (1908, 2 K.B. 807), a workman contracted enteritis from inhaling sewer gas in the course of his employment. The Court of Appeal held that this was not a case of "injury by accident," and that the decision in Brinton's Limited *v.* Turvey is not to be taken as involving the doctrine that all diseases contracted by a workman in the course of his employment are to be regarded as accidents within the Act. His honour held that the application was governed by the case of Broderick *v.* London County Council and dismissed the case with costs.

Refusal to Submit to an Operation.

A case of some interest to the medical profession came before the Haywards Heath county court on March 18th. Henry Bourne, a labourer, aged 62 years, claimed compensation under the Workmen's Compensation Act, 1906, for injuries sustained while in the employ of the Mid-Sussex water board. While in the engine-room at the Balcombe waterworks on Sept. 22nd Bourne was called upon to assist in moving a heavy valve which fell on one of his hands, causing serious injury. He became totally disabled. The employers, on the advice of a medical practitioner, suggested that the hand should be operated upon with a view to the straightening of the fingers, contending that if this were done Bourne would be able to resume his work in the ordinary way. The plaintiff, however, declined to go under an operation and two medical men gave evidence that an operation was inadvisable inasmuch as the plaintiff was not a proper subject for an anæsthetic. The respondents contended that this objection was an unreasonable one and asked for the decision of the judge whether the plaintiff's present position was not the result of his unreasonable objection to undergo an operation. His honour Judge Scully held that the plaintiff's objection to an operation was not unreasonable and made an award of 13*s.* a week from the date of the accident to Feb. 12th, and 10*s.* a week so long as the incapacity lasts, the respondents to pay the costs.

Looking Back.

FROM

THE LANCET, *SATURDAY*, March 26th, 1831.

UNITED SERVICE MEDICAL CLUB.

(*From a Correspondent.*)

IT is proposed to establish a UNITED SERVICE MEDICAL CLUB, to include the officers of the East India Company's service. It is not intended to seek *patrons* and *vice-patrons*, as it is presumed the medical officers of the three services possess talent and integrity enough within themselves, without high-sounding names, to establish and conduct their own institution. The most eminent men in the three services to be chosen as directors, a library and museum to be furnished by donations—Gratuitous lectures on scientific subjects connected with the medical profession by competent members, who shall volunteer their services—An *economical* hotel on the principle of the existing service clubs, established in a central part of the metropolis, and connected with the institution. Officers of either service approving, will please to signify their assent, with a view to a general meeting, to Charles Maybery, Esq., Surgeon, R.N., Sycamore Cottage, Little Chelsea, London, secretary *pro temp.*; to Thomas Wakley, Esq., Editor of THE LANCET, or the proposer, John Gooch, Surgeon, H.M.S. Prince Regent, Sheerness. All letters to be postage paid.

March 21, 1831.

Public Health.

REPORTS OF EDUCATION OFFICERS.

County Borough of West Bromwich Education Authority.—In presenting his first annual report to the education authority Dr. J. H. H. Manley, who is also medical officer of health of the borough, states that each school is visited in turn and the children of a given age are examined in the presence of their parents in cases where such parents have been induced to attend. In the case of children about to leave the school finally the parents have not been summoned, since the children, being of riper age, are able to speak for themselves. Since his appointment Dr. Manley has examined 3300 children, a number which includes special cases which have been referred to him and seen either at the school or at the office. The method adopted in West Bromwich is to keep each year of children separate in order that it may be possible eventually to trace almost every child from birth to the end of its school life and thus to acquire a complete set of statistics. One of the incidental subjects which have engaged Dr. Manley's attention has been that of the attendance of children below the age of five years. It appears that in West Bromwich there are but few mothers who are employed in factories, and when the husbands are regularly employed very few of the women go out as charwomen. Moreover, the majority of children in the district are found to be breast-fed. In these circumstances Dr. Manley does not think that the exclusion from school attendance of children under five years of age would inflict hardship on the parents, and he considers that such exclusion would in many cases be better for the children. He evidently suspects that in the matter of economy the education committee may be found to attach more value to the space occupied by the infants than to their company. On listening to lessons delivered to the children upon the races and religions of British India or on the Wars of the Roses Dr. Manley has, he says, been led to reflect whether lessons on the simple rules of hygiene might not be preferable. He finds it possible to group the parents of the children into four classes: (1) those who are interested in their children and who could, if they wished, send them to private schools but who recognise the advantage of availing themselves of the teaching provided by the State; (2) those who are equally interested but less well off; (3) those whose position is equal to Class (1) but who are indifferent to the cleanliness or welfare of the children; and (4) the idle and dissolute class whose children reflect faithfully the environment in which they live. As to this latter class the committee of the education authority has acquired powers to prosecute parents who neglect their children. As regards the treatment of the defects discovered on inspection, Dr. Manley thinks that the appointment of a school nurse will eventually be necessary, as the time of the health visitor is so fully occupied under the Notification of Births Act. There is, we gather, an arrangement made with the district nursing home for the attendance of all cases referred to them either by the medical officer or the education officers. In the course of the examination cases in which the sixth standard had not been reached were specially investigated and endeavours made to determine the cause of the backwardness. It was found that the causes could be grouped into mentally defective, physically defective, frequent and prolonged illness, frequent change of residence, and bad home environment. The figures as regards vermin are rather startling—one-sixth of the girls examined had parasites in their hair, while 227 out of about 600 children had never used a toothbrush. A considerable amount of defective vision was brought to light and it would seem that some of the children were unable to follow the writing on the blackboard. The average time occupied in the examination of each child was about six minutes. Dr. Manley hopes that when some financial aid is forthcoming from the Treasury

further provision for treatment may be made, and he evidently contemplates the free gift of spectacles and perhaps the establishment of school clinics.

Bilston Education Authority.—The medical officer to this authority is Dr. T. Ridley Bailey, who is also medical officer of health. On examining into the previous history of the children born in 1902 and 1903 the fact that measles and whooping-cough are mainly diseases of early infancy was clearly brought out. It was found that even before five years of age measles attacks practically a half and whooping-cough nearly a third of those living. As to the cleanliness of the children examined, Dr. Bailey is of opinion that the vermin nuisance will never be abolished until there are larger powers for dealing with it and until the provision of larger cloakrooms is made compulsory. Schoolgirls should, he thinks, be made to wear their hair short and, when necessary, the education authority should be empowered to have the hair cut. As he points out, the Children Act will give powers to compel the cleansing of verminous children. Tooth-brushes are rarely used by the Bilston children and no case of tooth stopping was observed. With respect to the children who were leaving school, it was found that no less than 120 out of 340 examined were suffering from some defect or other. Of these children 60 had defective sight and had finished their school career before it was detected. Among the total number of scholars examined 719, or more than one-seventh of the whole, were found to be suffering from some condition deleterious to health, and it is, as Dr. Bailey observes, very gratifying to find that within nine months more than a third had undergone treatment. A school sister, who is a trained and certificated nurse holding a diploma of midwifery and a certificate from Guy's Hospital and the Metropolitan Asylums Board, has now been appointed to devote her time jointly to assisting in medical inspection and to do work under the Notification of Births Act. This appointment should greatly facilitate the work which devolves upon Dr. Bailey.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8632 births and 6985 deaths were registered during the week ending March 20th. The annual rate of mortality in these towns, which had steadily increased in the five preceding weeks from 17·9 to 22·1 per 1000, was again equal to 22·1 during the week under notice. During the first eleven weeks of the current quarter the annual death-rate in these towns averaged 18·8 per 1000, and in London the mean rate during the same period was equal to 19·6 per 1000. The lowest recorded annual death-rates in these towns last week were 10·3 in Walthamstow, 11·9 in Devonport, 12·0 in Hornsey, and 12·5 in Wallasey; the rates in the other towns ranged upwards, however, to 26·7 in Warrington, 27·9 in Liverpool, 28·2 in Sheffield, and 36·7 in St. Helens. In London the recorded death-rate during the week was equal to 24·0 per 1000. The 6985 deaths from all causes in the 76 towns last week showed a further increase of but 13 upon the rapidly increasing numbers in recent weeks, and included 725 which were referred to the principal epidemic diseases, against numbers increasing from 452 to 635 in the five preceding weeks; of these 725 deaths, 438 resulted from measles, 122 from whooping-cough, 54 from diphtheria, 45 from diarrhœa, 42 from scarlet fever, 22 from "fever" (principally enteric), and two from small-pox. The 725 deaths from these epidemic diseases, in the week under notice, were equal to an annual rate of 2·3 per 1000, against rates increasing from 1·4 to 2·0 in the five preceding weeks; in London the recorded rate from these diseases was also equal to 2·3 per 1000. No death from any of these epidemic diseases was registered during last week in Birkenhead, Northampton, Huddersfield, Rochdale, or in six other smaller towns; the annual death-rate therefrom, however, ranged upwards in the other towns to 6·3 in Wigan, 6·5 in Sunderland, 7·4 in Smethwick, and 17·0 in St. Helens. The fatal cases of measles in the 76 towns, which had steadily increased in the five preceding weeks from 188 to 372, further rose during the week under notice to 438; the highest death-rates last week from this disease were 4·2 in Birmingham, 4·4 in Smethwick, 4·6 in West Hartlepool, 4·7 in Aston Manor, 5·9 in Sunderland, and 13·2 in St. Helens. The 122 deaths from whooping-cough were within two of the number in the previous week, and caused death-rates equal to 1·4 in Nottingham, 1·6 in Brighton, 2·0 in Great Yarmouth, and 2·7 in Swansea. The 54 fatal cases of diphtheria showed a further decline from recent weekly numbers, but included 22 in London and its suburban districts, four in Liverpool, and four in Manchester and Salford. The 45 deaths attributed to diarrhœa showed a further slight increase and a proportional excess in Smethwick. The 42 deaths from scarlet fever exceeded by eight the number returned in the previous week, and caused the highest death-rates, 1·9 in Blackburn and 2·2 in St. Helens. The 22 deaths referred to "fever" also showed a slight excess upon the low numbers in recent weeks, and included six in Manchester and two in Warrington. Of the two fatal cases of small-pox, one occurred in London and one in Bristol. The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospitals, which had been 2825, 2873, and 2870 at the end of the three preceding weeks, had declined to 2596 on Saturday last; the new cases of this disease admitted to these hospitals during last week were 279, against 285 and 268 in the two preceding weeks. The registered deaths in London referred to pneumonia and other diseases of the respiratory organs, which had steadily increased in the five preceding weeks from 441 to 758, declined to 651 in the week under notice, but exceeded by 296 the corrected average number in the corresponding week of the five years 1904–08. The 126 deaths directly referred to influenza in London last week also exceeded the same corrected average by 85. The causes of 59, or 0·8 per cent., of the deaths registered in the 76 towns during last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death registered during last week were again duly certified in Leeds, West Ham, Bradford, Newcastle-on-Tyne, Hull, and in 47 smaller towns; the 59 uncertified causes of death in the 76 towns last week included, however, 16 in Liverpool, ten in Birmingham, four in Sheffield, and three in Gateshead.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had steadily increased in the five preceding weeks from 18·2 to 21·6 per 1000, declined again to 21·1 in the week ending March 20th. During the first 11 weeks of the current quarter the annual death-rate in these eight towns averaged 19·4 per 1000, and exceeded by 0·6 the mean rate during the same period in the 76 large English towns. Among the eight Scotch towns the death-rate during the week under notice ranged from 17·2 and 17·6 in Edinburgh and Perth to 23·8 in Paisley and 26·0 in Greenock. The 754 deaths from all causes registered in the eight towns last week showed a decline of 17 from the increasing numbers in recent weeks, and included 87 which were referred to the principal epidemic diseases, against numbers steadily increasing from 73 to 96 in the five preceding weeks; of these 87 deaths, 51 resulted from whooping-cough, 12 from diphtheria, 11 from diarrhœa, six from scarlet fever, five from "fever," and two from measles, but not one from small-pox. These 87 deaths from epidemic diseases were equal to an annual rate of 2·4 per 1000, against 2·3, the mean rate during the week from the same diseases in the 76 English towns. The fatal cases of whooping-cough in the eight Scotch towns, which had been 67 and 55 in the two preceding weeks, further declined last week to 51, of which 37 occurred in Glasgow, five in Dundee, three in Aberdeen, and two both in Edinburgh and Paisley. The 12 deaths from diphtheria, however, showed a slight further increase upon recent weekly numbers, and included six in Glasgow and two in Dundee. Of the 11 deaths attributed to diarrhœa, showing a decline of 12 from the number in the previous week, eight were returned in Glasgow. The six fatal cases of scarlet fever showed a slight increase, and included two each in Glasgow, Edinburgh, and Paisley. The five deaths referred to "fever," of which four were certified as enteric and one as cerebro-spinal meningitis, were all returned in Glasgow. A fatal case of measles occurred both in Dundee and in Paisley. The deaths from diseases of the respiratory organs in the eight towns, which had steadily increased

in the six preceding weeks from 131 to 173, further rose to 187 in the week under notice, and exceeded by 29 the number returned in these towns in the corresponding week of last year. The causes of 24, or 3·2 per cent., of the deaths registered in the eight towns last week were not certified; in the 76 large English towns the proportion of uncertified causes of death last week did not exceed 0·8 per cent.

HEALTH OF DUBLIN.

The annual rate of mortality in Dublin, which had been equal to 24·3, 26·6 and 27·5 per 1000 in the three preceding weeks, further rose to 29·3 in the week ending March 20th, and exceeded the rate in any previous week of this year. During the first eleven weeks of the current quarter the death-rate in the city averaged 25·5 per 1000, whereas the mean rate during the same period did not exceed 19·6 in London and 18·2 in Edinburgh. The 224 deaths of Dublin residents from all causes during the week under notice showed a further increase of 14 upon the numbers in recent weeks, and included 13 which were referred to the principal epidemic diseases, against 15 and 17 in the two preceding weeks. These 13 deaths were equal to an annual rate of 1·7 per 1000; the rate from these epidemic diseases in the same week was equal to 2·3 in London, but did not exceed 0·9 in Edinburgh. Of the 13 deaths from these epidemic diseases in Dublin last week, five resulted from measles, four from whooping-cough, three from "fever," and one from diarrhœa, but not one either from diphtheria, scarlet fever, or small-pox. The fatal cases of measles, whooping-cough, and "fever" scarcely differed from those returned in the previous week. The 224 deaths registered during the week included 29 of infants under one year of age and 73 of persons aged upwards of 60 years; the deaths of infants were fewer than in any recent week. Six inquest cases and four deaths from violence were registered last week; and 83, or 37·1 per cent., of the deaths occurred in public institutions. All the causes of death in Dublin last week were duly certified; in London the causes of all but one of the 2225 registered deaths were certified; while in Edinburgh seven, or 6·0 per cent., of the causes of death were uncertified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet-Surgeons: A. J. Pickthorn to the *Triumph*; H. S. R. Sparrow to the *Sapphire*, additional, for the *Sapphire II.*; and E. Corcoran to R.M. Division, Plymouth. Surgeons: F. E. Bolton to the *President*, additional, for three months' course at the West London Hospital; and M. W. Haydon to the *Thames*, lent during the absence of Staff-Surgeon Pearce.

SPECIAL RESERVE.

Royal Army Medical Corps.

Captain Charles Roger Tichborne, from the late Royal Army Medical Corps (Militia), having assented to be transferred, is appointed to the Special Reserve of Officers, retaining the rank and seniority which he held in the Militia (dated Sept. 20th, 1908).

TERRITORIAL FORCE.

Royal Field Artillery.

2nd West Riding Brigade: The undermentioned officers from the 2nd West Riding of Yorkshire Royal Garrison Artillery (Volunteers) are appointed to the brigade, with rank and precedence as in the Volunteer Force (dated April 1st, 1908): Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel Isaac Mossop; and Surgeon-Captain John Crossley Wright (to be supernumerary).

Royal Garrison Artillery.

Hampshire: The undermentioned officers from the 1st Hampshire Royal Garrison Artillery (Volunteers) are appointed to the unit, with rank and precedence as in the Volunteer Force (dated April 1st, 1908):—Surgeon-Captain Edmund Napier Close and Surgeon-Captain Alexander Arthur MacKeith.

Tynemouth: Surgeon-Captain John Cromie to be Surgeon-Major (dated July 17th, 1908).

Royal Army Medical Corps.

1st London (City of London) Field Ambulance: Lieutenant Charles A. Lees to be Captain (dated Nov. 19th, 1908).

1st Welsh Field Ambulance: Patrick Joseph McGinn to be Lieutenant (dated Jan. 21st, 1909).

4th London General Hospital: Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel (Honorary Captain in the Army) Atwood Thorne, from the 2nd Middlesex Royal Garrison Artillery (Volunteers), to be Lieutenant-Colonel with the honorary rank of Surgeon-Colonel, with precedence as in the Volunteer Force (dated April 1st, 1908). George Nixon Biggs to be Major (dated Feb. 26th, 1909). 5th Northern General Hospital: Major Astley Vavasour Clarke from the Mobilisation List, Royal Army Medical Corps, Territorial Force, to be Lieutenant-Colonel (dated Feb. 24th, 1909). Captain Louis Kenneth Harrison, from the Mobilisation List, Royal Army Medical Corps, Territorial Force, to be Major (dated Feb. 24th, 1909). Sanitary Service (officers whose services will be available on Mobilisation): Captain Louis Coltman Parkes to be Major (dated March 24th, 1909).

Captain Claude B. Ker to be Major (dated April 1st, 1908).

For attachment to Units other than Medical Units.—Surgeon-Captain Ralph Bennett Sidebottom from the 6th Battalion, The Cheshire Regiment, to be Captain (dated Oct. 3rd, 1908). Captain Ralph B. Sidebottom to be Major (dated Oct. 4th, 1908). The announcements of the transfer of Surgeon-Captains Edmund Napier Close and Alexander Arthur MacKeith from the 1st Hampshire Royal Garrison Artillery (Volunteers), which appeared in the *London Gazette* of Oct. 20th, 1908, are cancelled.

1ST LONDON DIVISION OF THE ROYAL ARMY MEDICAL CORPS (TERRITORIAL FORCES).

On March 20th Surgeon-General Sir Alfred Keogh, Director-General of the Army Medical Service, distributed the prizes to the 1st London Division of the Royal Army Medical Corps of the Territorial Forces at their headquarters in Calthorpe-street, Gray's Inn-road. In an address he said that women could do useful work in connexion with the Territorial Force. The wives of the officers and men of the division might combine to organise a corps which would be of the utmost value to the country.

THE VISIT OF THE RUSSIAN SQUADRON.

On March 17th Dr. Bonnje, the senior medical officer of the Russian squadron, and other Russian medical officers, were entertained at lunch with Inspector-General T. D. Gimlette and the officers of Haslar Hospital. After lunch there was an inspection of the hospital.

THE TERRITORIAL NURSING SERVICE.

On March 15th the Lord Mayor of London presided at a meeting held at the Mansion House the object of which was to enlist interest in the Territorial Force nursing scheme. Lady Helen Munro Ferguson, after referring to the splendid way in which Scottish nurses had responded to the appeal for the Territorial hospitals, said nurses were the only section of women who could take part in national defence. She appealed to the nurses of the metropolis to volunteer for service in the London district which would embrace four hospitals. Each hospital would require 91 nurses but in order to provide for contingencies it was proposed to increase that number to 120. Miss Haldane endorsed Lady Ferguson's appeal, remarking that the Home Army would be lacking in its most essential element if the women did not help in its composition. Surgeon-General Sir Alfred Keogh, Director-General of the Army Medical Service, said that the first duty of medical work in time of war was to maintain the fighting strength of the Army. After a few remarks from Miss Stewart, matron of St. Bartholomew's Hospital, the meeting closed with a vote of thanks to the Lord Mayor and the Lady Mayoress.

SIKH MEDICAL OFFICERS.

The *Army and Navy Gazette* of March 20th says: "It is not often that regulations have to be amended to suit a special caste, but the Government of India, acting at the instance of the Punjab Government, have taken steps to do so in order to allow Sikh officers of the Indian Medical Service to keep their hair long and to wear a puggaree with

uniform. In the religion of the Sikhs no cutting instrument is ever to touch the hair. Now the Army Council has decided that in any future cases of Sikhs being admitted on probation to the Indian Medical Service and attending the Royal Army Medical College and Royal Army Medical Corps Depôt they are to be permitted, should they wish to do so, to keep their hair long and wear a puggaree with uniform instead of a helmet."

THE SANITARY SERVICE OF THE TERRITORIAL FORCE.

Arrangements have been made by a committee of officers for a dinner of the officers of the Sanitary Service of the Royal Army Medical Corps, Territorial Force, at the Hotel Métropole on Saturday, May 8th, at 7.30 P.M., at which Mr. Haldane, the Secretary of State for War; Sir W. G. Nicholson, G.C.B., Chief of the General Staff; Sir Alfred Keogh, K.C.B., Director-General of the Army Medical Staff; and Sir W. H. Mackinnon, K.C.B., M.D., Director-General of the Territorial Force, will be present as guests. Those who wish to attend the dinner should intimate their intention at once to Surgeon-Colonel William R. Smith, M.D., 37, Russell-square, London, W.C.

Scarlet fever has broken out on the *Impregnable*, the Devonport training-ship.

Correspondence.

"Audi alteram partem."

THE MINORITY REPORT OF THE POOR-LAW COMMISSION AND THE INFANTILE MORTALITY IN WORKHOUSES.

To the Editor of THE LANCET.

SIR,—The figures published in the Minority Report of the Poor-law Commission as to the infantile mortality in workhouses and Poor-law infirmaries obviously require careful investigation. There are, however, certain considerations which make it highly probable that the deductions drawn from them by the Minority Commissioners and by some writers in the public press are not justified. For instance, the whole of the figures after the first three weeks of life are obviously erroneous, because the report states that they have been obtained by assuming that the death-rate amongst the children discharged is at the same rate as amongst those detained in the infirmary. The fact is, however, that infants are not detained as a rule in the infirmary after the first three weeks unless the child is ill. Obviously, if the death-rate of these sick children is assumed to apply to the healthy children discharged the death-rate so obtained will be very much greater than the real death-rate. Again, some of the figures are so extraordinary that they can hardly be accepted until verified and the methods of recording the births and deaths have been critically examined.

However, confining one's attention to the death-rate during the first three weeks of life, the figures given show that the death-rate is higher in infirmaries and workhouses than it is amongst the general population. The cause of this is fairly obvious. Amongst the women received into the maternity wards of workhouses and Poor-law infirmaries are many who have been underfed and overworked throughout the period of pregnancy and many who have been admitted to the infirmary owing to syphilis and other diseases; the majority of them are unmarried, and in the case of many, owing to disease or to deliberate interference on the part of the mother, the child is born prematurely. It is manifestly unfair to compare the infantile death-rate of such a population with the infantile death-rate of the general community. The same influences do not affect to anything like the same extent the voluntary lying-in hospitals or maternity charities: firstly, because the benefits of such charities are usually reserved to respectable married women; and secondly, because pregnant women suffering from concurrent disease tend to be weeded out from the *clientèle* of such charities and sent into Poor-law infirmaries and general hospitals. Nevertheless, one lying-in hospital quoted in the report shows a mortality rate of 59·3 per 1000 for the first 14 days of life, as compared with a mortality-rate for the same period in Poor-law institutions of 46 to 53 per 1000.

How impossible it is to found any certain conclusions upon the figures supplied is well shown by the returns obtained by the Minority Commissioners from the Plaistow Maternity Charity. In this charity only 15·33 per 1000 of the children died during the first fortnight—i.e., about half the infantile death-rate in the general population for that period. From this the writers of the report draw the conclusion that it is better the mothers should be attended in their own homes than sent into hospitals or infirmaries. On the same lines one could argue that, in order to reduce the infantile death-rate in the general population, all mothers should be confined in what the Minority Commissioners describe as the "poor and wretched homes" of Plaistow.

I am, Sir, yours faithfully,

C. T. PARSONS.

Fulham Infirmary, Hammersmith, W., March 20th, 1909.

THE SECTION OF ANÆSTHETICS OF THE ROYAL SOCIETY OF MEDICINE AND THE PROPOSED GENERAL ANÆSTHETICS BILL.

To the Editor of THE LANCET.

SIR,—I think this question should be lifted out of its present somewhat personal atmosphere into one worthy of its importance. I may refer, however, very briefly to Dr. F. Hewitt's letter in THE LANCET of March 13th, p. 790, to express my regret that he finds my attitude unintelligible; my present letter I trust will prove that my position is really a simple one and consistent with what many may regard as equitable and advantageous to the public interests. The statistics of deaths under nitrous oxide which Dr. Hewitt has been good enough to explain are, as he says, really immaterial to the issues; they were, however, originally advanced to support the contention that qualified dentists are not persons to whom the grave responsibilities of administering an anæsthetic should be intrusted. The statistics in their present form demonstrate that in 21 years six deaths have occurred in the practice of dentists. We have yet to learn whether the administrators in these particular cases possessed the L.D.S. diploma or fell into the categories of "registered dentists" or "unregistered" dentists. The "unregistered," it may be pointed out, are in the eyes of the law not dentists. The statement that of the 12 administrators, grouping all the anæsthetists together, four possessed a diploma (what diploma?) and four possessed only the right to practise in virtue of being registered, while four were not dentists at all, does not itself afford any direct evidence that L.D.S. diplomates have lost a patient through administering nitrous oxide. Four of them may have done so, and the fatality may have occurred through want of skill, but the whole matter is one of supposition and must at present be left undecided.

Let us now consider the main issues. These are: (1) the danger to the public through the use of anæsthetics by persons possessing insufficient, or no medical and surgical knowledge; (2) the inadequacy of the present scope of the teaching of anæsthetics and the absence of statutory compulsion requiring students to give proof of knowledge of experience in the administration of anæsthetics before admission to examinations for a degree or diploma qualifying to practise.

1. All, I take it, agree to the existence of this danger and would heartily welcome any efficient means of preventing it. For unqualified persons to give anæsthetics is one of the most dangerous forms of unqualified practice, if not the most dangerous. Some members of the profession may doubt whether such perils can be prevented by Acts of Parliament; even so, obviously any step should be welcomed which holds out a chance of checking the evil. By the drafting of the proposed "General Anæsthetics Bill" "medically qualified and registered practitioners" are made the only legal anæsthetists. Personally I regret this and consider that dentists possessing a diploma, whether at present in practice or yet to enter upon practice, should be included among those legally qualified to administer anæsthetics in dental practice. I should prefer that "Clause 1" should read: "Any person other than a legally

qualified medical" [or dental] "practitioner registered under the Medical" [or Dentists] "Acts who shall ——," &c., and that in the case of the dentist I should prefer his practice in anæsthetics should be restricted to the employment of nitrous oxide gas, and for dental operations, since dentists enjoy large experience in the use of this anæsthetic. I submit that dental students who obtain the L.D.S. diploma of the Royal College of Surgeons of England pass through an adequate medical and surgical training, and enjoy many opportunities of learning how to administer nitrous oxide gas. Of the other L.D.S. diploma curricula I am not competent to speak. My conclusion is based upon an examination of the English L.D.S. curriculum and the pass questions set during the last ten years, as well as upon my association as a teacher with dental students for over twenty years. However, this is a "pious opinion," and as such is of little value by itself. But assuming my view is quite incorrect, it seems to me that in this case dental students and medical students fall under "the same condemnation" as regards anæsthetics. Both sets of men are at present inadequately taught and the remedy is the same for both groups, and exists in affording ampler education. The deficiency is a reason for reform in teaching, not in confiscation of a department of practice which has been enjoyed by the dentists since 1878. I understand that the British Dental Association, which comprises more than 1700 members, is considering the proposed Bill, and as this body, while presiding over the interests of its members, exerts itself to promote the welfare of the public as regards dental matters, much weight attaches to whatever attitude it assumes towards the measure. Such an Association working with the British Medical Association should be in a position to arrive at a *via media* between extreme views.

2. Upon the spirit of Clause 2 all are agreed, although, as might have been foreseen, the executive of the General Medical Council takes exception to an appeal being made to Parliament concerning any matter which appears to fall within the immediate purview of the Council itself. At present the subject of anæsthetics is inadequately taught to all students. In some schools the instruction is not compulsory, in many the time placed at the disposal of the teachers of anæsthetics is wholly insufficient for them to hope to transform students into satisfactory administrators of anæsthetics. Except in the case of exceptional men, and exceptional men must always be "a law unto themselves," the students at present do not acquire a competent knowledge of anæsthetics unless they obtain a resident post at their hospital. One individual may acquire facility in the use of ether, another in that of chloroform, but of such is not the kingdom of anæsthetists. No doubt if all the portals to practice were blocked by the necessity of producing proof of adequate knowledge in this branch of training, provision would be made in all teaching schools for a minimum amount of instruction. This is not enough. If deaths under anæsthetics are to be lessened by increase in the area of compulsory teaching that teaching must be made much more thorough and exacting, and must be committed into the hands of professors who occupy the same status as those who dominate kindred branches of medicine and surgery. The schools must not be merely stepmothers to anæsthetics, they must admit this subject on the same terms as all other subjects of the curriculum and extend to its teaching the same facilities. Whether an Act of Parliament will promote this end it is impossible to say. I hope it may do so, or that failing its aid some other means will be found for the purpose.

Clause 3 would drop out if the extension suggested to Clause 1 were made. There is yet another and, I submit, most important matter which should be dealt with in any legislation about anæsthetics. The employment as local injections of such substances as cocaine and its congeners is, in the hands of unqualified persons, a menace to the public safety. Should nitrous oxide be ruled out as a means of producing "painless dentistry" one or other of the proprietary articles, most of which contain cocaine as a dominating factor, will be increasingly adopted. When I pointed this out I was met with the objection that the insertion of the local analgesics in the purview of the Act would deprive the Bill of its simplicity and render legislation more difficult. No doubt this is true, but surely when the matter affects the public safety the objection is insufficient. The insertion of the words "or medicaments used to produce local anæsthesia [analgesia]" after the phrase ending "a state of unconsciousness" in Clause 1 of the proposed Bill would meet the requirements of the case and would not materially complicate the wording of the measure. As this side issue especially interests the members of the British Dental Association, the view of that body might be elicited with advantage.—I am, Sir, yours faithfully,

DUDLEY W. BUXTON.

Mortimer-street, Cavendish-square, W., March 16th, 1909.

THE PHYSIOLOGY AND PATHOLOGY OF WORK IN COMPRESSED AIR.

To the Editor of THE LANCET.

SIR,—It was not my intention to have taken further notice of Dr. Leonard Hill, but as the last paragraph of his second letter, which appeared in THE LANCET of March 13th, p. 792, requires amplification, since it is not inclusive enough, the following extract may not be without interest to some of your readers and of educational value to Dr. Hill himself. It is taken from "Practical Physiology," by several contributors, published by Edwin Arnold, 1902, and appears on page 400. The extract is taken from an article written by Dr. Leonard Hill. "Increased Atmospheric Pressure. A curarised frog, with the brain pithed, is placed in the high pressure chamber, the web of one foot is spread out on a wire ring beneath one of the glass observation discs. The apparatus is screwed up and connected with an oxygen cylinder. The circulation is observed with a microscope, using an inch objective. The pressure is increased to 20–50 atmospheres. The circulation continues unaffected, for the pressure is equally transmitted throughout the fluids of the body." The experiment as thus detailed is one of a series of exercises for students and is therefore public property. I have never heard of any teacher claiming an exercise.

Dr. Hill's objection to my experiments is that they were performed upon pithed frogs in which, because pithed, he either thought or had forgotten that the circulation could continue. According to the above the frogs he used were also pithed and the circulation continued unaffected. Wherein lies the difference between his method of pithing and mine that will in any way explain, or be an excuse for, his rodomontade? The words he sought to apply to me must therefore equally apply to the individual occupying the chair of physiology in the London Hospital College of Medicine: "He shows himself less fitted than I thought to hold a chair of physiology."

I am, Sir, yours faithfully,

Newcastle-upon-Tyne, March 23rd, 1909. THOMAS OLIVER.

THE CLINICAL VALUE OF HÆMOMANOMETER OBSERVATIONS.

To the Editor of THE LANCET.

SIR,—The observations of Dr. William Russell on post-mortem arteries cannot be accepted *per se* as a proof of the unreliability of the obliteration method of estimating blood pressure, because of the contraction which occurs on manipulation of such excised arteries—a contraction which has been studied so fully by Professor J. A. MacWilliam. I have taken a fresh ox carotid six millimetres in diameter, and by manipulation seen it contract to two and a half millimetres in diameter. This kind of contraction occurs when an artery is torn, and we must have proof that it occurs in a large artery during life and in continuity, and to such an extent as to make the artery so rigid as to vitiate sphygmometer readings. Physiologists find that compression of a living artery in continuity causes it to relax. Herringham and Womack found in post-mortem arteries it required in some cases about 10 mm., in a few about 20 mm., and in two cases a little over 30 mm. Hg. to obliterate the walls, and that there was no clear relation between the amounts found and the age, &c., of the subject. Supposing we grant Dr. Russell's contention that extreme contraction occurs in living arteries, we have at present no evidence that it will explain away at the outside more than 30 mm. of the high pressures (200 mm. and over), which he says are quite impossible.

Dr. Russell maintains the view that the heart has no reserve power to withstand a pressure of more than about 20–30 mm. above the normal. Physiologists know, however, that the blood pressure can easily be doubled in an animal by the injection of suprarenal extract or excitation of the vaso-motor system. The hypertrophied heart must have far greater power than the normal heart. Dr. Williamson has attempted to substantiate this opinion (or deduction) of Dr. Russell by observations on the blood-pressure after forced exercise. I would point out that his observations are few in number and give no certainty that the normal resting pressure was obtained. Dr. Martin W. Flack and I have published in the *Journal of Physiology* a series of observations on the blood-pressure of runners, boxers, and students after very severe stair-climbing exercise. The pressures were taken with my new sphygmometer, which enables one to take the pressure in the radial very quickly and immediately after the exercise. We found pressures rising in some cases to 220 millimetres and double the normal resting pressure in several cases. Inhalation of oxygen, too, made the artery *fuller* and the pressure higher. In students in hot baths we have found the pressure fall to 65 mm. Hg, so that we have a range from 65 to 220 mm. Hg in normal men under these extreme conditions. In my own case recently during a headache I had a pressure of 165 mm. when resting lying down, falling to 100 mm. when the headache cleared off and with no sign of a contracted artery. On asking my colleagues the clinicians whether they have felt such rigid contracted arteries as Dr. Russell describes I have not obtained any affirmation, nor have I yet been able to find such a case to make measurements upon by my methods. I wish Dr. Russell would set such a case before me. Dr. Russell does not quite grasp, I think, the physiology of our "gravity method" when he compares the "leg up" readings of our three subjects. The men were of unequal stature, their legs were hoisted up to unequal extents and the vital reaction of the vaso-motor system to the change of posture was not necessarily the same in each. The whole point of this experiment is that the measurements in arm and leg came out fairly well in comparison with the column of blood separating the two places of measurement. This is a method which can very easily be applied to pathological cases and will yield, I think, results of great interest, for it will show us how far the compensation for gravity is disturbed in various morbid states. Dr. Flack and I find the cerebral pressure in the normal student is kept fairly constant in all three postures—horizontal, standing, and suspended head down. On rising from a very hot bath the compensatory mechanism does not act, the pulse accelerates, and the pressure falls greatly and the student becomes faint.

Dr. Williamson says that he has found marked inequality of pressures in the leg and arm in the horizontal posture in various pathological cases. I would ask whether these pressures were measured simultaneously, with one armlet on the arm and the other on the leg connected with one manometer, and the observer feeling radial and posterior tibial at the same time. It is essential that this should be done because (1) the systolic pressure of some pathological cases often varies with successive beats; (2) obliterating the leg may affect the pressure more than obliterating the arm; and (3) the pain produced by the armlet in cases of high pressure often is sufficient to make a difference to the pressure. I found recently that pain produced by keeping the armlet on too long raised the pressures 20 mm. in a case where at 210 mm. both radial and posterior tibial were obliterated together. I make no dogmatic statement, for I think it possible that rigid arteries may be found by the gravity method which disturb the accuracy of the readings, although up to the present I have found none. I am no partisan and defend no position but the establishment of the truth in this matter. We must bear in mind that Hürthle and others have found the systolic wave to be higher in the femoral than in the carotid of dogs. As to our "venous method," which I claim to be the most convincing method of proof, Dr. Russell seeks to overthrow this by measurements he has made with Dr. George Oliver's hæmomanometer. Now the first part of our inquiry was directed towards testing the accuracy of small unenclosed bags by this very vein method, and we quickly reached the conclusion that the application of such a bag to a vein was a proceeding which could only lead to error. The pressure of a small unenclosed bag cannot be applied so as reach the vessel in its full force. The armlet method is the only method by which the veins can be compressed and, contrary to what Dr. Russell says, it was quite easy for us to raise the pressure much higher than the pressure in the upper armlet and then let go for a time so that the veins could fill, and raise the pressure again, and so on, and we never found the pressure in the veins rise above that in the upper armlet. The ordinary laws of physics would be seriously upset if it did do so. Dr. Russell by his finding twice this pressure in the veins has only proved that Dr. Oliver's hæmomanometer cannot be used for the purpose to which he has applied it. We have just done two more cases, one of 185 mm., and find the pressures correct by the vein method.

I am, Sir, yours faithfully,

Loughton, March 14th, 1909. LEONARD HILL.

THE MEDICAL DEFENCE UNION AND INSURANCE AGAINST LEGAL RISKS.

To the Editor of THE LANCET.

SIR,—In consequence of the demand which has lately sprung up for insurance of medical practitioners against the risk of pecuniary loss when adverse verdicts, involving payment of plaintiff's costs and "damages," are returned against them in civil actions in their professional work, the council of the Medical Defence Union has concluded arrangements with a company of the very highest repute, "The Yorkshire Insurance Co.," for such indemnity. All members of the Medical Defence Union can now by payment of a yearly premium of the small sum of 7*s.* 6*d.* effect insurance up to the limit of £2000, and for a payment of 9*s.* up to the limit of £2500, in any cases defended by the Union in this respect. For fuller particulars and general conditions members are referred to the Secretary of the Yorkshire Insurance Co. (founded 1824), Bank Buildings, Princes-street, E.C., to whom all applications by members of the Union for policies should be made.

The Medical Defence Union will, as heretofore, guarantee the legal expenses connected with the defence of their members in any case taken up by the Council, and conduct such defence through their solicitor and counsel; the Yorkshire Insurance Co. will, in addition, guarantee the costs ordered to be paid and any damages up to £2000 or £2500 respectively in any individual action in which a verdict adverse to the member defendant is obtained. Thus a complete guarantee against pecuniary loss up to these limits to an individual member of the Medical Defence Union is secured in this respect; and further, by effecting the insurance the members of the medical profession will, I hope, no longer be harassed by appeals to their charity for defraying the expenses incurred when actions are recorded against the individual practitioner concerned; and this will undoubtedly be a great gain individually and collectively.

I am, Sir, yours faithfully,

A. G. BATEMAN,
General Secretary, Medical Defence Union.

4, Trafalgar-square, W.C., March 19th, 1909.

TO MEDICAL FREEMASONS.

To the Editor of THE LANCET.

SIR,—May I once again, through the medium of your widely read columns, appeal to medical men, and medical Freemasons in particular, for votes for the Masonic charities. At the forthcoming elections in April there are two medical candidates for the Royal Masonic Institution for Boys. Votes for either institution are equally valuable and will be gratefully received and acknowledged by me.

I am, Sir, yours faithfully,

WILLIAM WILSON,
Secretary, St. Luke's Medical Lodge of Instruction.

184, Goldhawk-road, W., March 24th, 1909.

THE BELGRAVE HOSPITAL.—The Belgrave Hospital for Children, Clapham-road, is making a special appeal for funds in order that the two wards and the out-patient department, which have been of necessity closed, may be reopened. The hospital's building debt is about £5000 and there is a deficit of half that sum on the current account.

ON THE ROAD TO EGYPT.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

THE AUSTRIAN-LLOYD SCHOOL OF COOKERY.—SANITATION ON THE AUSTRIAN SHIPS.

Cairo.

MANY routes lead to Egypt and it is no easy matter to select the best. Indeed, there is no best route, for what is preferable in one case is just the reverse in the other. Thus for rest and sea air the long journey from London or Liverpool by the Straits of Gibraltar is naturally to be recommended. On the other hand, those who fear the sea and wish to travel quickly will go by train to the farthest land point—namely, to Brindisi. The popularity of sea routes, however, is spreading rapidly. The increasing luxury, size, and steadiness of modern ships rob the sea of many of its terrors, and the number of cruising expeditions round the Mediterranean is yearly augmenting. The question of sanitation at sea therefore gains in importance. For my part, I selected the Trieste route, mainly because I had heard so much good spoken of the Austrian-Lloyd line. Considered from the point of view of a hotel, with courteous and careful attendance and excellent cuisine, the Austrian-Lloyd, I had been assured more than once, came very high if not first among passenger ships.

Apart from the agreeable prospect of travelling by this line, the journey to Trieste provides the opportunity of going through and visiting many very interesting places in Europe. From England or the north-west of Europe the traveller may rest at Munich and then pass across the Austrian Alps. With equal facility the journey can be broken at Paris and from there in one single stage, either Turin, Milan, or Venice can be reached. Most persons who have the time to spare, are glad of a pretext for visiting or revisiting Venice. From the sanitary point of view the French Touring Club has several hotels to recommend to its members at Venice, and this is a guarantee of cleanliness, good drainage, and moderate charges. Then, by boat or by train, Trieste is only a few hours away. Thus the traveller is able to obtain a glimpse of northern Italy, for he can break his journey at Turin, Milan, Verona, and Venice.

If the sea is feared undoubtedly this is the safest route. There is only the Channel to cross. Thus the boisterous bays of Biscay and Lyons are avoided and the traveller embarks at the head of the Adriatic, which is a narrow quiet sea protected on both sides by land and mountains. The ship for Alexandria starts at noon every Thursday, and by about 2 P.M. on Friday looks in at Brindisi. Here also passengers may go on board and thus avoid one of the four days of the sea journey. Towards 4 in the afternoon of the Friday the ship puts out to sea once more, and in favourable circumstances is moored alongside of the quay at Alexandria before 6 o'clock on the Monday morning. A special train waits by the side of the ship; it does not start till 8 o'clock, so there is plenty of time for breakfast, for landing the luggage, passing it through the Custom House, and placing it on board the train for Cairo. From Trieste the journey is six hours less than four days, and from Brindisi nine or ten hours less than three days, and this in the calmer parts of the Mediterranean. Consequently the Trieste route is to be recommended to those who desire an interesting overland journey, a short sea passage, and that over a part of the Mediterranean where rough weather is less frequent than, for instance, between Gibraltar and Sicily or in the Gulf of Lyons.

In my view, the traveller who selects the Trieste route for the reason that he is frequently sea-sick will not find the cuisine for which the Austrian-Lloyd is celebrated wasted upon him. Of course, sea-sickness is not favourable to gastronomic indulgence, but the art of cooking consists of creating an appetite where it does not exist and palatable food is not wasted upon sea-sick people. Hunger is the best of sauces in one sense, a person who is hungry enough will eat anything however badly cooked and nasty it may be. But hunger does not create the gastronomic arts: it, on the contrary, renders them less necessary—anything becomes good enough to eat. But to tempt the appetite of the sea-sick victim real culinary skill is required. Something delicately flavoured, succulent, pleasant alike to the eye and the palate and yet not over rich, is required to induce a willingness to eat in those on whom the motion of the ship still produces a sense of nausea.

At Trieste I was courteously received by one of the chief directors of the Austrian-Lloyd and found that he took the greatest interest and pride in the *cuisine* of the ships. He explained that they had created a real school of cookery. The company took youths at the age of 15 and deliberately and carefully taught them to be cooks and stewards. They had also evening classes on shore for foreign languages. The greater part of their crews only spoke Italian, therefore they had to be taught English, French, and German, but the art of cooking was the first and most difficult subject of instruction. They had no books, but a tradition of their own which consisted of a mixture of the French and Viennese schools with the occasional addition of a purely Italian dish. The director also explained that a *chef* on board is like a Minister in his Cabinet; he has a retinue of administrators under him whom he orders about and teaches. If they make good use of the lessons they receive they become *chefs* in their turn and are finally rewarded with a pension for their old age. Thus has the Austrian-Lloyd school of cookery been created and many old experienced travellers will go some distance out of their way so as to travel on one of these ships and enjoy the refinements of the table that await them.

As for the ships themselves there is not so much to be said. They are, for the most part, British built ships and the ship-building done at Trieste is under the direction of Mr. W. Mackey, whose experience has been acquired on the banks of the Clyde. One or two of the oldest cargo ships date back 35 years. Others, though carrying a large amount of cargo and comparatively few passengers, are as good as the more exclusively passenger ships. Many of the latter are from 10 to 15 years old and have defects like most ships of the older schools. Thus some closets have only one outlet pipe and when that is blocked then the whole system is blocked. Some of the ships are being reconstructed and I was able to visit two of these while in dock—the *Thalia* and the *Prinz Hohenlohe*. On the former ship I found the stewards slept on iron-framed bunks and at one side of the cabin the air is pumped in by an electric fan and drawn out at the other end, thus creating mechanically a through current. This is very good, but in the firemen's quarters I could find no such arrangement. The sailors' ventilation was dependent upon a large down pipe that could not easily be blocked. The first-class cabins are, of course, on the higher decks and give on to passages which provide the air. This, therefore, depends on doors and port holes.

The *Prinz Hohenlohe* was built in England quite recently—a fact which does not mean that the best methods of ventilation have been employed. There is an air-shaft in the forecastle which creates at times too strong a draught and the men complain that the uncovered iron sides of the ship are very cold. The stewards' quarter has only two washing basins and no bath. There are two small ventilators on either side of the cabin, but as these discharge the fresh air just above beds and are not provided with any sort of baffle, I found on inquiry that both had been blocked up. The ventilator in the passage of the second-class cabin is also and for the same reason often closed. This ship has a large number of single berth first-class cabins. This is very pleasant. The cabins, of course, are very small, but much to be preferred to larger cabins with two, three, or four passengers in the one cabin. The saloon cabins depend on the passages for their ventilation, and the chief thing is that there can be no overcrowding. In a word, there is no new feature. The sailors' quarters are not worse than what exists in England in respect to construction and are much better in regard to the amount of space allowed. In all the new ships the Austrian law stipulates that seamen shall have 180 cubic feet and firemen 150 cubic feet of space per man. This law has now been in force three years. It will be remembered that the British law only insisted on 72 cubic feet till recently, when the allowance was raised to 120 cubic feet, still, therefore, far below the Austrian standard. The stewards' quarters of the *Thalia* are much better than those I have seen on many English passenger ships and there seems to be a proper tendency on board these ships to take care of the stewards. This is very important not merely for the men themselves but for the persons on whom they have to wait. On board the *Koerber*, which I visited in the harbour just as it was about to sail for Bombay, I was

assured that the stewards had a bath and I saw the douche room provided for the sailors. The captain in taking me round this ship pointed out that even in small passenger cabins there were two port-holes, the idea being that one might act as an inlet while the other served as an outlet. Then the galleys and other large compartments were provided with big clean upshafts to the boat deck. The walls of the cabins were of the *persienne* type, and by a lever action might be opened more or less while an electric screw-shaped fan in each cabin kept the air in motion. The passages open above on to the boat deck above, thus providing good opportunity for ventilation.

In one respect there is still need of a much more severe discipline. For the passengers, especially the saloon passengers, so far as I have been able to hear and observe on the ships that I visited and while travelling over to Alexandria on the *Cleopatra*, the greatest cleanliness is maintained in the saloons, cabins, bathrooms, and closets. But this is not always the case in the latrines and urinals used by the crew and sometimes by the third-class passengers. Here the closets are allowed to become filthy and foul smells to arise just simply as the result of sheer negligence. An occasional bucket of water or, better still, a good scour out with the fire-hose, would remedy the evil in a few minutes. There is nothing in these places that the water would injure, and being surrounded by the sea there is no lack of water. Idleness and negligence are the only and sole reason why these places often become extremely foul. Their filthiness constitutes a nuisance and a danger, and there is no excuse for it because it could be so easily remedied. The directors of the company informed me that the Austrian-Lloyd would shortly build two new ships expressly for the Alexandria service, and it was proposed that these ships should be quite up to date in every respect. But they were somewhat puzzled to know what system of ventilation to adopt. There is one thing, however, about which there need be no perplexity and no hesitation, and this not for the new ships but in regard to all the ships both old and new. The floor and walls of the closets for all the crew and for the third-class passengers must be lined throughout with some metal or other water-tight substance and this indeed is generally the case. They are not provided with wooden seats, which certainly would be difficult to keep clean, and being water-tight all round a bucketful of water may be thrown inside from the door without doing any damage whatsoever. But it would be better still to scour out the place with the fire-hose. This should be done at least once, but better still two or three times, a day. It would involve very little trouble and must become a matter of habit and never under any consideration whatsoever be neglected. The Austrian-Lloyd Steamship Company enjoys a high reputation among experienced travellers. It would be absurd to allow its good name to be compromised by neglecting so essential and yet so simple a matter as the frequent and periodical washing out of the sanitary conveniences provided for the crews and the third-class passengers.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

The General Hospital and the Queen's Hospital.

As in the cases of the smaller and more special hospitals to which it has been necessary to refer recently, so also in the cases of the General Hospital and the Queen's Hospital, the annual reports are records of increased work, improved methods and conditions, and either decreased or relatively decreased support. In the case of the General Hospital, the total income was £24,204 and the total expenditure £26,567. The deficit was therefore £2263 and the total deficit now amounts to £10,060. The total income, it is true, is greater than it was in either of the two previous years, if the amount received from the musical festival is deducted from the total of 1906, but in spite of that it is not adequate for the work and it does not increase in proportion to the requirements of the population. Moreover, the surplus of income in 1908 as contrasted with 1907 is more than accounted for by an increase in the amount received from legacies, a most uncertain source of income and one that is very likely to become less to be depended upon. The case of the Queen's Hospital is even worse than that of the General Hospital. The expenditure for 1908 was £14,226, or £1440 more than in 1907, whilst the income for 1908 was £505 less than the income for 1907. In both cases there has been a diminution in the amount received from the Hospital Sunday and general collections, and in the case of the General Hospital a diminution in subscriptions also. It is possible that the diminution or relative diminution of income will be temporary and that it is due to trade depression and the rather large number of important appeals which have been put forward during the last few years; or it may be a sign of the desire to transfer duties from individuals to the State which has been so assiduously fostered and which is showing signs of rapid growth.

Measles.

Our medical officer is hopeful that the epidemic of measles has reached its height and may now be expected to gradually subside, but the records show that we must not hope for very rapid improvement nor for any very sudden decrease of our abnormally high death-rate. Acting under the advice of Dr. John Robertson, the medical officer of health, the education committee has decided to take some steps which may prove very useful at the commencement of future epidemics and may possibly do something to hasten the decline of the present attack. The committee has decided to instruct the teachers to notify the medical officer of health whenever measles is said to be the cause of absence of a scholar. The medical officer having received the information will cause inquiries to be made, and, if the case is verified, the teachers will be informed, when they will distribute circulars to the scholars who have not had measles and who are in the same class as the affected child. The circulars will be taken by the children to their parents and they will contain information which will enable the parents to recognise the symptoms which are present one or two days before the rash appears and when the patient is so very infectious. The circulars will also contain instructions that the children are to be kept away from school as soon as any of the premonitory symptoms appear and for three weeks after the development of the rash. The education committee has also decided that when there is a case of measles in a family the children who have not had the disease are to be kept away from school, but those who have previously had measles are not to be kept away, and the teachers have been informed that in future the fact that there is measles in a family will not be deemed a reasonable excuse for the absence of a child who has previously had measles.

The Ear and Throat Hospital.

The annual report of the Ear and Throat Hospital shows a deficit of £482, the total income being £2692 and the total expenditure £3174. Both the income and the expenditure are somewhat greater than last year, the latter fact being due to greatly increased work. The out-patients numbered 8,381, which constitutes a record for the hospital. There were 335 more in-patients than in the previous year and 111 more patients were treated in the day ward. A very considerable number of the patients treated at the hospital come from the surrounding districts, such patients forming 42 per cent. of the in-patients and 30 per cent. of the out-patients, and the finances of the hospital would be in a more satisfactory condition if the outside districts contributed an amount of money proportional to that provided by the Birmingham people.

The Skin and Urinary Hospital.

During the past year the number of in-patients at the Skin and Urinary Hospital increased slightly, the out-patients decreased slightly in number, and 55 applicants were rejected because it was found that they were able to pay for medical treatment. In presenting the annual report the committee expressed its regret that the financial position of the hospital did not permit it to provide the medical staff and the patients with all the apparatus and appliances which were desirable but which could only be obtained when increased subscriptions were available, and in this association the complaint was made that neighbouring places sent patients but no corresponding subscriptions to the hospital.

The Closure of the Birmingham Institution for Trained Nurses.

Forty years ago the Birmingham Institution for Trained Nurses was established to provide Birmingham with trained nurses, who at that time had to be imported from London

when they were required. The institution was provided with a home by the generosity of the late Mr. Timothy Kenrick, the father of our present Lord Mayor, and it has thoroughly justified the desires and intentions of its promoters. It trained nurses, provided them with a home, paid them a certain proportion of their earnings, established a pension fund, helped its daughter institution, the Birmingham District Nursing Society, and invested its surplus funds. The training of nurses has been taken over by other organisations, and latterly the institution has merely served as a home from which the public could obtain nurses; that function also is performed by other institutions and there is now no difficulty in obtaining nurses. Therefore, as the lease of the premises at present occupied by the institution has expired and it has not been deemed advisable to build new premises, the committee has decided to close the institution. The funds of the institution on Dec. 31st last amounted to £17,761. The greater part of this sum is to be expended in purchasing pensions for those nurses who are eligible for them under the terms of the pension fund, but it is estimated that when arrangements have been made for the pensions a sum of about £5000 will remain, and the committee proposes to hand this to the Birmingham District Nursing Society, believing that by so doing it will be acting in conformity with the intention of the late Mr. Kenrick.

March 23rd.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Small-pox in Cotton.

THERE has recently been rather a scare about the introduction of small-pox through the medium of Egyptian cotton. Mr. H. E. Corbin, the borough medical officer of health, believes that of three cases which have occurred at Stockport one originated directly through infection from Egyptian cotton imported into a local mill, and that though the evidence is only circumstantial he is almost certain he has traced the infection. In the other two cases the patients were not cotton workers but had been in contact with the first case. Mr. Corbin says that at present there is an epidemic of small-pox in Egypt. No further cases seem to have occurred in Stockport and steps have been taken to prevent the disease spreading. Some short time ago another cotton worker in the town contracted small-pox, and in that case he satisfied himself that the cotton, which came from an American port where small-pox was prevalent, was the cause of the outbreak. Bolton has likewise suffered, small-pox having been there, also caused apparently by Egyptian cotton, while the Hurst district council has asked that the attention of the mill-workers should be called to the matter so that they might take all possible precautions. Mr. Corbin suggests that the infection has been conveyed by the practice of wetting the fingers with saliva before piecing broken threads or, as one may suppose, by putting the thread into the mouth to wet it, when the infectious germs might convey the disease. The possibility of infection by the inhalation of cotton dust must not be forgotten. Mr. Corbin supposes that no one known to be suffering from small-pox would be allowed to handle cotton on the other side of the water, but such a thing might happen, as it seems to have done, either from carelessness or neglect.

Manchester Medical Women.

On March 17th Mrs. Elizabeth Garrett Anderson, M.D., mayor of Aldeburgh, was entertained at breakfast at the Midland Hotel by the Manchester Association of Registered Medical Women. Dr. Margaret M. Smith, chairman of the association, welcomed Mrs. Anderson, and said that she had overcome many difficulties and made the study of medicine so much the easier for the women of to-day. In reply, Mrs. Anderson expressed her pleasure at meeting so many Manchester women, and said she considered that medical women's societies had a distinct purpose which could not be met by the existing men's societies. They permitted a freedom of social intercourse and interchange of ideas which was otherwise impossible.

Death when Weight Lifting.

In these days of the worship of athleticism young men are sometimes likely to strain the heart with evil consequences, varying from injury which may bear fruit in the future to collapse and immediate death. This was shown at an inquiry as to the death of a young man who, when lifting a 70 pound dumbbell at "Professor Langford's Physical Culture School," collapsed and died almost immediately. The young man was 27 years of age, well developed and strong, and had often lifted heavier weights. The coroner asked the instructor whether he had known any of his pupils to suffer from over-exertion, to which the answer was "No." As to any medical examination being exacted he replied, "No, not exactly. I ask them, of course, if they have been attended for heart disease. That is the usual course." He agreed with the coroner that it would be better to get a medical certificate, but he did not think there were many institutions where the pupils underwent a medical test. The medical evidence showed that death was due to syncope following strain on the heart, which was in an unhealthy condition. In answer to the coroner it was stated that the condition of the heart could have been detected, when the deceased would have been cautioned against lifting heavy weights. The coroner said he thought it very desirable that the instructors should get a medical certificate. The verdict was in accordance with the medical evidence, and the jury agreed with the coroner as to the necessity of a medical examination.

A Poor-law Problem.

The elevation of certain classes of the poor to a higher civilisation is advocated by everyone. When, however, ways and means are considered by boards of guardians the ideal is often lost sight of. At so respectable a board as that of the Salford guardians a recommendation of the infirmary visiting committee that 500 combs and brushes should be supplied for the use of patients struck one member of the board as a most amazing request. He considered that the board instead of making the institution a hospital of luxury should keep it in strict conformity with requirements—the ordinary ideas as to cleanliness clashed with his notions of economy, and the former had to go to the wall. A supporter of these views, however, made something like a point when he remarked that the provision in the offices for 14 guardians was one comb and brush. It was reserved for a lady guardian to say that they really ought to have a set each, though some members did not seem to require this. An amendment negativing the recommendation was lost, while cleanliness and hygiene triumphed. This little occurrence revives the recollection of a case where derisive laughter on the part of some members of another board of guardians met the proposal that the workhouse children should be provided with toothbrushes.

March 23rd.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Royal Hospital for Sick Children, Edinburgh.

THE annual report for the year 1908 bears testimony to the valuable work which continues to be carried on at this hospital. During the year 2275 cases were treated in the wards, of which 1424 were medical and 851 surgical. The average daily number in hospital was 102, and the average duration in hospital was only 15 days. The number of operations performed in the surgical theatre was 720, while in the out-patient department 1403 minor operations were performed under an anæsthetic. The total number treated in the wards and in the out-patient department was 29,065, which is less by about 500 than for the preceding year. The ordinary income was £6075, while the ordinary expenditure was £8880, showing a deficit of £2804. The new convalescent home, Muirfield House, Gullane, would, it was stated, be ready for occupation in the beginning of May. Reference was made in the report to the death of Dr. C. E. Underhill and of Dr. D. Argyll Robertson, both of whom had served the hospital for many years. The medical officers report that at no time in its history did the hospital occupy a higher place in the estimation of the public and the medical profession than at the present time, the evidence of this being found in the increasing number of patients who bring letters recommending them for admission not only from Edinburgh but

from all parts of Scotland. Clinical teaching had also been assiduously carried on, the cliniques and general practice of the hospital having been attended by large numbers of students and by many graduates from other schools as well as Edinburgh. The hospital has this year entered upon its jubilee year and an interesting meeting of contributors was held in the hospital on March 17th, the chair being occupied by Mr. James Clark, advocate, chairman of the directors. Two of the originators of the hospital were present at this meeting—namely, Dr. John Smith and Mr. George Barclay—and both took part in the proceedings. Two ladies were added to the board of directors—namely, Mrs. Maconochie and Mrs. Wauchope.

Medico-Psychological Society.

A largely attended meeting of the Scottish division of the Medico-Psychological Association of Great Britain and Ireland was held, by the courtesy of the University authorities, in the physiological department of the University of Glasgow last week. Dr. L. R. Oswald was in the chair and Professor D. Noel Paton, in the absence of Principal Sir Donald MacAlister, extended a hearty welcome on behalf of the University to the members of the division. After the routine business of the meeting had been transacted, Dr. Ivy McKenzie read a paper on General Paralysis and Syphilis from the Biological Chemistry Point of View, in which it was suggested that the author's treatment, which has been adopted by the Sleeping Sickness Bureau of the Royal Society, might advantageously be used for the treatment of general paralysis of the insane. Dr. Henry J. Watt, lecturer on psychology at the University, gave an account of the recent progress in the analysis of reactions and demonstrated a large number of reaction time instruments.

Montrose Asylum Board Representation.

Some time ago a deputation from the parish councils of Forfarshire and Kincardineshire approached the Secretary for Scotland in connexion with the management of the Montrose Asylum, and as the outcome it was decided to communicate with the asylum managers with a view to having the present charter amended so as to permit of parish council representation on the asylum board. To consider this communication a private meeting of the managers of the asylum board was held on March 16th. After full discussion had taken place it was agreed by a large majority to forward to the Lunacy Board a written statement expressing the views of the managers. It is understood that the majority were of opinion that no change should be made in the charter, but as a matter of courtesy agreed to reply to the Lunacy Board in the way indicated. The unanimous feeling of the meeting was that the affairs of the board were being conducted in an entirely satisfactory manner under the present *régime*.

Dundee and the Municipalisation of the Sidlaw Sanatorium.

The Dundee town council gave authority at its meeting on March 18th for the agreement between parties in the transference of the Sidlaw Sanatorium to be signed. The donors and subscribers to the institution on their part agreed by 17 votes to 3 to a similar course, so that all that now remains to be done is for the sanction of the Local Government Board to be secured. The citizens' committee, however, is contemplating an action of interdict and has issued a circular to the subscribers of the sanatorium in which it points out that the scheme has been rushed and that the cost to the ratepayers will very much exceed the 2*d*. in the £ on the rates per annum estimated by the promoters.

Death of James Hutchison Stirling, LL.D. Edin. and Glasg., F.R.C.S. Edin.

On March 19th there passed away in his eighty-ninth year James Hutchison Stirling, who, besides being a veteran metaphysician and philosopher, had practised as a physician up to 1851. He was born in 1820 and was educated at the University of Glasgow, classes at which he began to attend in 1833 at the age of 13 years. The period from this time to 1842 he spent in completing the course in arts and medicine, and he became a Licentiate of the Royal College of Surgeons of Edinburgh in the latter year, while 18 years later, in 1860, he became a Fellow. Early in life he showed a leaning towards metaphysical studies, and in 1838 the then professor of moral philosophy gave him as a subject for a thesis St. Anselm's argument in the Proslogion for the existence of God. With the fine carelessness of youth Stirling is said to have pronounced this argument a sophism, although in later life he came to regard it as "the first word of modern philosophy." In 1843 he settled in practice at Hirwain, Glamorganshire, and later he removed to Glyn Neath. He was for some time surgeon to the Hirwain and other iron and coal works in South Wales. On the death of his father in 1851 Stirling retired from practice and went abroad. He studied firstly in Paris under Dumas, Orfila, and Milne Edwards. In 1854 he moved to Germany, where he resumed his philosophical researches in the study of Kant and Hegel. In 1857 he returned home and devoted himself to writing books on philosophy, the first being a critique of the views of Sir William Hamilton, published in 1865, and in the same year he published his principal work, "The Secret of Hegel." In 1867 the University of Edinburgh gave him the degree of LL.D. In 1869 his book, "As Regards Protoplasm," appeared. Between this date and 1888 many other works of his were published, the most important being the "Text-Book to Kant" in 1881. In 1888–90 he was appointed the first Gifford lecturer of the University of Edinburgh, and his lectures entitled "Philosophy and Theology" were published in 1890. In 1901 he received the degree of LL.D. from the University of Glasgow. Three years later appeared his "Darwinianism: Workmen and Work." His last published book was "The Categories," which appeared in 1903.

March 23rd.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Children's Hospital, Temple-street, Dublin.

THE annual charity sermon in aid of the Children's Hospital, Temple-street, and the new convalescent home at Finglas was preached on Sunday last (March 21st) in St. Teresa's Church, Clarendon-street, by the Rev. Father Stanislaus to a large and highly representative congregation. The preacher, in the course of an eloquent and sympathetic appeal, pointed out that neither of these institutions had any endowment or, indeed, any fixed source of revenue whatever. Accordingly they were obliged to depend solely on the contributions of a charitable public for the relief and sustenance therein afforded to the thousands of helpless children who were sheltered in their wards during the year and received skilled professional treatment therein. It is generally believed that the appeal was liberally responded to. No public is more responsive than that of the Irish metropolis to a truly benevolent call such as that made in favour of the Children's Hospital, as its numerous public institutions conclusively prove, and it must be added in the spirit of just recognition that not one of those institutions has proved more worthy of support and confidence than has this excellent refuge for the afflicted little ones of the Dublin poor.

The Bakers' Society of Belfast.

At a meeting of the Belfast Public Health Committee held on March 18th the secretary of the Belfast Master Bakers' Society tabled a report in reference to statements made by a deputation representing the Operative Bakers' Society regarding the way bread is at present being put out by large firms. These statements were characterised as "not only wrong but groundless." He pointed out (1) that bread is baked now more thoroughly than it was some years ago, and (2) that the utmost care is brought to bear on the manufacture of pastry, the ingredients used being pure and wholesome. The masters invited a full inquiry into the whole matter by the health authorities.

Drunkenness in Ireland.

Speaking at a visitation in Saintfield, county Down, the Most Rev. Dr. Tohill, Roman Catholic Bishop of Down and Connor, mentioned that from the trustworthy figures published it appeared Ireland spent last year in drink over £15,000,000. He thought that, considering the poverty of the country, it was an alarming statement, for it worked out that the expenditure per head in Ireland was £3 1*s*. 6*d*. It was quite evident, he added, that there could be no notable rise in the prosperity of Ireland unless the expenditure in alcoholic drink was immensely diminished.

Appointment for a Belfast Man.

Mr. Ernest W. MacBride, M.A. Cantab., D.Sc. Lond.,

F.R.S., Strathcona professor of zoology, McGill University, Montreal, has been appointed to the professorship of zoology in the Imperial College of Science and Technology, South Kensington, London. Mr. MacBride, who is the eldest son of a well-known and much respected Belfast merchant (Mr. E. MacBride), studied at Queen's College, Belfast, and at Cambridge, where he was foundation scholar and subsequently Fellow of St. John's College.

March 23rd.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Median Laparotomy for Appendicitis in Women.

AT the meeting of the Society of Paris Surgeons held on March 5th M. Dartigues read a paper in which he advocated that in cases of appendicitis in women operated on *à froid* the incision should begin below the umbilicus and be in the median line. On this matter he said he was in agreement with M. Reymond. Median laparotomy prevents the operator from missing ovarian, or tubal lesions if such are present. In describing his technique M. Dartigues showed models of the retractors which he uses.

Lacto-serum.

At the meeting of the Academy of Medicine held on March 9th Dr. Raoul Blondel read a paper upon the Physiological Properties of the Serum of Cow's Milk. This is obtained by coagulating the milk with hydrochloric acid or rennet and then filtering off the whey through an Arsonval candle which at the same time sterilises it. The whey thus sterilised in the cold contains, besides milk sugar and salts, the ferments of the milk, in particular the oxydases, which sterilisation by heat destroys. When injected under the skin whey causes an increase in leucocytosis, a fall of temperature more or less marked in febrile cases, and a discharge of uric acid and a very marked lowering of blood pressure in those suffering from hypertension (in cases of normal or of hypotension this fall does not take place). Dr. Blondel has employed this treatment in various conditions with striking success. In pneumonia the results are very similar to those obtained by treatment with the metallic ferments. Cases of arterial hypertension are, however, those in which whey seems to have the greatest effect, as M. Albert Robin and M. Huchard have already informed the Academy. According to their observations made in the wards under their care, injections of whey (10 cubic centimetres) have brought down the blood pressure in a few days to normal, and the subjective phenomena, such as headache, sleeplessness, and breathlessness when walking, disappeared. A few injections given from time to time prolonged this favourable condition. In some patients it lasted for five months after the first treatment, even though they were no longer careful as to their regimen. Albuminuria depending upon high tension disappeared under the treatment, but if the kidneys were affected the treatment had no effect.

Mercury in the Treatment of Syphilitic Infants.

M. Comby, at a meeting held on Feb. 16th, gave the Society of Pediatrics an account of his usual method for the treatment of syphilis in infants. First of all the child is rubbed for five minutes every day with a flannel upon which is spread about 2 grammes of Neapolitan ointment—i.e., unguentum hydrargyri. The friction should be made alternately upon the right and left side of the abdomen, in the right and left armpit, in the right and left groin, and upon the internal aspect of each thigh, but the same places must not be rubbed a second time without an interval of eight days. During the first year of life a daily friction is given with a rest of 15 days every three months. During the second year the rubbing is repeated every alternate month. During the third year the rubbing is only given one month out of three. During the early months of the treatment M. Comby introduces every morning and evening, into each nostril, a little of the following ointment: vaseline 30 grammes, precipitated calomel three grammes. If there are any eruptions on the skin a medicinal bath is given for ten days. The bath must last for ten minutes and be at a heat of 35° C., and be given in a wooden bathing tub which holds about three litres. In the water is dissolved 30 centigrammes of perchloride of mercury and 30 centigrammes of ammonium chloride. M. Comby has never observed any evil effects from this treatment and has always found it efficacious. He has entirely given up the use of iodide, mercury alone seeming to be quite competent to overcome the syphilitic poison.

March 22nd.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

A Simplified Method of Disinfection.

Professor von Herff of Basle, writing recently to the *Deutsche Medizinische Wochenschrift*, gave a report of his method of disinfection of the skin. The principal feature of his method is that it avoids wetting the skin; water, soap, and brush are no longer used, because in the opinion of the author they bring the germs from the deeper layers of the skin, where they are innocuous, to the superficial layers. A bath is given to the patient a day previously to the operation and the hair is removed either by a razor or by a depilatory powder. Neither bandage nor antiseptic compress is applied to the site of operation. Immediately before the operation the skin is washed for four minutes with a flannel moistened by a mixture of alcohol and acetone. The skin is then covered by a skin varnish which is applied by a spray. During the operation, of course, no fluid is used, dry gauze pads being exclusively used. To prevent the dressing sticking to the wound the latter is covered by tincture of benzoin and a plain gauze bandage is applied and fixed by adhesive plaster. To clean the vagina an irrigation with some hundred grains of an alcoholic solution of iodine is used. Pure alcohol alone only decreases the germs for a short time; to produce a longer and more intense sterility a compound which dissolves the fat must be added. Acetone is the best for this purpose because of its strong hygroscopic action by which the skin is really dried. Absolute sterility of the skin was not obtained, but only a very few germs were left; the same, however, is the case after the usual disinfection by sublimate. Great stress must be laid on the use of the tincture of benzoin, which forms a rather solid cover for the wound; the bacteria are in this way inclosed and made innocuous. The advantages of Professor von Herff's method compared with the usual technique are that it requires much less time, that it is trustworthy, and that it saves the skin. The clinical results were excellent. Within 14 months out of more than 300 major operations which had been performed, only 20 (7 per cent.) died, the death being in no case due to a deficiency of the aseptic method. The wounds healed quickly. The results were that 95 per cent. healed without complication, the remainder, 5 per cent., being complicated by stitch abscess or sloughing of the edges of the wounds.

March 21st.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

The Health of Florence.

YEAR by year the sanitary conditions of Tuscany, and particularly of its capital, become more and more interesting to the outlying world—to none more than to the English-speaking portion of it. In high favour as a residence, in city and suburb, in palazzo and villa, it attracts the temporary visitor in still greater proportion, as the multiplication of hotels and pensions, to say nothing of the increased accommodation in the various places of worship, amply testifies. It is therefore satisfactory to note that the health of the city, though still by no means so good as it ought to be, is steadily improving. The last statistical year, for instance, shows a distinct diminution in the death-rate as compared with its predecessor, which in turn contrasted favourably with the year before. In 1908 the mortality from every cause was 4787, equal to 20·64 per 1000, while that of 1907 was 5037, or 22·32 per 1000. In other words, the diminution as a whole was that of 250 cases, or about 2 per 1000. A further satisfactory return falls under the causes of death—infective diseases and those of the respiratory organs

in particular. Measles claimed 15 victims, as against 39 in 1907; typhoid fever, 48, as against 68; cerebro-spinal meningitis, 6, as against 16; diphtheria, 31, as against 74; and pertussis, 10, as against 71. To this finding there is one exception—that of scarlet fever, which numbered 17 fatal cases, as against 3 the year before. Under the head of diseases of the respiratory organs we note a great decrease—776 in 1908, as against 978 in 1907. Other figures have an interest of their own; for instance, malignant tumours show an augmentation—385, as against 347; renal maladies, 194, as against 157; accidental deaths, 62, as against 48; and suicides, 71, as against 54. Homicides, on the other hand, numbered 5, as against 13 in 1907. On the whole, as I have said, Florence, by her latest official returns, is placing herself on the high road of improvement as a residence for native and foreigner alike, while her attraction as a historical, literary, scientific, and artistic centre remains unique; never more so, indeed, than in the day now passing, when on upland and lowland the belated Primavera is working her "transformation scene," in which

"Gratior it dies,
Et soles melius nitent."

March 22nd.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Measles in Infants under One Year of Age.

A SERIES of researches, undertaken by Dr. Sperk in the pædiatric clinic of Professor von Escherich and communicated to the Medical Society of Vienna at a recent meeting, showed some very remarkable results. It has been ascertained that measles is the most frequent infectious disease of infants under one year of age, excepting only whooping-cough in children between the ages of one and five months. This experience is contrary to the statistics hitherto accepted as correct and is trustworthy at least for Vienna, as it is based on 552 cases, of which 30 per cent. were observed in in-patients and 70 per cent. in out-patients. The results allow of the following conclusions. The first month of life seems to be immune against measles; in exceptional cases a child may be infected in the second or third month; from the third to the sixth month (inclusive) the probability that a child may catch measles is as great as that he may remain free from it. In the second half of the first year of life it is only exceptionally that a child exposed to infection does not contract it. Children living in the same room become affected in groups, according to their susceptibility and disposition; this allows the supposition of an indirect mode of infection, but also suggests the advisability of special preventive measures within the same room or ward. No influence of nutrition could be ascertained. Koplik's sign is often absent as a premonitory sign, but it appears together with the exanthema in infants. The leucopenia, so constant during the persistence of the rash, is also present during the prodromal stage; it has, therefore, a diagnostic value. The typical measles face is the less pronounced the younger the patient, but very often the rash is first seen, and most marked, in the genital region, especially in children suffering from intertrigo (a typical place of invasion). The prognosis of measles within the first 12 months of life is much worse than later; the time of incubation, varying between 13 and 14 days, pertains only to the interval between infection and eruption. Exceptionally long incubations (from 30 to 33 days) may be best explained by the fact that a very slight, imperceptible attack has been overlooked, and that such a case has served as disseminator. Amongst the 552 cases Dr. Sperk only once saw measles without an eruption on the skin, but an enanthema was present. An infection by means of a go-between could not be proved. therefore one is entitled to say that the children infect each other. The mode of infection is, however, still unknown.

Medical Preparation for War.

The medical corps of the Austrian army is just now somewhat unpleasantly to the fore. Certain deficiencies were made public a short time ago, especially the insufficient number of staff surgeons. Since then the possibility of a conflict with a foreign country has become threatening, and due provisions are now being made in all haste to bring the sanitary arrangements in case of war up to the best possible modern standard. Compulsory service is here law. Therefore all able-bodied medical men belong to the active or reserve part of the Army Medical Corps. Nearly all practitioners between the ages of 24 and 36 years have been informed to be prepared to re-enter the army, provided that they are not unfit for active service. If required, the surgeon must join his regiment within 24 hours. Naturally this would mean an enormous loss to the profession and it is the first time in history that a country having the system of compulsory military service, the "people's army" (Volksheer), is forced to call up its forces. In the Austrian army in full mobilisation about 200 men are allotted per surgeon. The qualification of these surgeons is excellent, but a mobilisation would mean, as said before, an enormous sacrifice by the profession and a calamity to the population, deprived of at least 30 per cent. of its medical advisers, to say nothing of the calling up of the wage-earners.

Coincidence of Chronic Tetany with Trophic Disturbances of the Lens and the Teeth.

Dr. Spieler demonstrated at a meeting of the Gesellschaft der Aerzte a girl, aged ten years, suffering from spasms of the glottis, cramps of the upper and lower extremities, and showing over-irritability of the facial nerve and the facial muscles to mechanical and electrical irritations. Exact examination showed the presence of Chvostek's, Trousseau's, and Erb's signs, which are essential for the diagnosis of tetany. Researches on the correlation between such disturbances and trophoneurotic changes of the ectodermal organs prompted Dr. Spieler to examine the eyes and teeth of the girl. An ophthalmologist found opacities in the lenses on both sides, consisting of small patches and thin radial striæ on the right side, of small spots in the left, the typical cataract of tetany. Even more interesting were the changes in the teeth. All teeth which had appeared before the close of the second year were normal, and all those which had appeared later (in this case the upper lateral incisors and all the premolar teeth) suffered from hypoplasia of the enamel. The tetany appeared at the end of the second year, and those teeth the crowns of which formed before this time were covered by normal enamel, whilst at the time when the tetany-causing agency or toxin was active the teeth too suffered from it. Apart from the disturbances in the development of teeth and lens the girl has also very thin hair. Thus the disturbed function of the epithelial bodies, which is now regarded as the reason of tetany, in this case produced also maldevelopment of ectodermal organs. Similar cases have been reported, but in none was the coincidence so marked and the history so clear as in this instance.

March 17th.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Pneumonia in the Young.

Dr. Kalman recently read a paper at the Medical Society on this subject. He based his remarks on an analysis of 6013 cases and 41,319 deaths collected from his own experience and the literature. The statistical portion of his paper does not lend itself to abstract. The mortality of the disease is only moderate in early childhood, reaches its lowest level between the ages of 10 and 20 years, gradually advances between 20 and 50 years, after which its rise is rapid. Children may have the disease at any age, though the new-born are least liable to it. Newly born children have no pneumococci in the throat and do not contract pneumonia until after they have acquired them. The usual clinical picture of pneumonia in children is so well known that it would be superfluous to describe it here. Stress is to be laid on the percussion dulness, the diminished breathing, and the crepitant râles. Dr. Kalman believes that the mortality is much lower than is usually stated. The treatment of the disease he considers an art. There is no specific. The methods he recommended were common sense, fresh air, or oxygen if necessary, the avoidance of exhaustion, tepid sponge baths, followed by alcohol rubs, the free administration of water, and good nursing. Medicinally a reliable tincture of digitalis was recommended early in the disease, with caffeine or adrenalin as indicated.

A Plea for Local Boards of School Hygiene.

Dr. Raisz has made an appeal to the State Medical Board of Public Hygiene for a great extension of the present methods of medical inspection of schools. He suggests that the Medical Board should take measures to establish national, State, and local boards of school hygiene, with specially trained medical officers in charge. After commenting on the preventability of certain diseases, the financial loss from deaths, and the prevalent diseases due to faulty school hygiene, he outlines his plan for the prevention of the present faulty conditions, most of which he ascribes to the ignorance of school boards and of the parents and the children themselves. Dr. Raisz suggests as a remedy the formation of a national board having charge of the school hygiene, and composed of non-partisan physicians, this board to coöperate with and instruct subsidiary State and local boards. The functions of the national board would be to provide plans for sanitary school buildings and furniture, to conduct civil service examinations for school medical officers, and to publish leaflets of instruction from time to time. The State boards should have the power to choose proper sites for schools, to frame laws governing school hygiene and enforce them, to close insanitary schools, and to keep records of the progress and development of the school children of the State. The local boards should consist of business men and physicians, should keep records, and should confer with the national and State boards from time to time.

Railway-car Sanitation in Hungary.

At the last meeting of the Hungarian Board of Health the executive officer was instructed to draw up certain rules and regulations regarding the sanitation of cars, which are to be considered at a conference with various railway officials and reported upon at the next regular meeting of the board. In carrying out its inquiry four cardinal necessities are emphasised by the board—viz.: (1) the supply of a sufficient amount of fresh air to the car and its proper distribution; (2) cleanliness of the car and its contents, including closets; (3) the proper heating of the car; and (4) the avoidance of overcrowding.

Maternal Syphilis.

There is an able article on maternal syphilis in the *Orvosok Lapja* from the pen of Dr. Vas. He considers that syphilis in the mother without paternal syphilis is rare, while the reverse is common. He calls attention to the lack of careful discussion of the subject in text-books and to the great difficulty in making a diagnosis of syphilis in married women. Their own ignorance of the disease, their faith in their husbands, combined with the reluctance of a man to confess his unfaithfulness to his wife's physician, all tend to obscure the diagnosis unless the symptoms are very definite. If physicians were to look oftener for syphilis they would find it explaining obscure symptoms. He advises the free use of mercury in pregnant syphilitic women as the only way of protecting the fœtus from the disease. If the child survives the first acute febrile outbreak of secondary symptoms it will probably respond to treatment, and very likely grow up healthy, especially if a member of the better classes. Even in cases where some deformity of bone has taken place, as in hydrocephalus, anti-syphilitic treatment often causes an absorption of the products of the disease, and later the deformity is not noticeable. Mercury is best administered to the infant by inunction, but it may be necessary to use hydrargyrum cum creta in spite of its action upon the bowels. Treatment should be continued for two months after all symptoms have disappeared.

March 18th.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Federation for the Medical Men of Western Canada.

RECENTLY there was held an important meeting of medical men of Winnipeg and surrounding country in the Medical Library of Winnipeg, to listen to an address by Dr. R. G. Brett of Banff, Alberta, upon the importance of reciprocity between members of the profession throughout the four provinces in Western Canada—namely, Manitoba, Saskatchewan, Alberta, and British Columbia. In his address Dr. Brett pointed out that Nova Scotia had already made the first advances in the direction of a general reciprocity amongst all the provinces of Canada, and was willing to admit graduates of other provinces to practise in that province provided the same privileges were extended to its own graduates. Dr. Brett pleaded for the burial of the petty dissensions among members of the medical profession throughout Canada, and urged the establishment of a central western examining board which would grant a licence to graduates of the various provincial medical colleges, which would enable them to practise at will in any of the provinces. So far as his province of Alberta was concerned they were strongly in favour of such federation of the provinces for the purpose of giving one examination and issuing one licence. He deplored the fact that the Bill framed by Dr. T. G. Roddick as the Dominion Medical or Canada Medical Act, having for its purpose one examination for the Dominion, had been killed through opposition from the provinces of Quebec and Ontario. It was embarrassing to answer the question frequently put by the laity as to why a graduate of one provincial college could not practise in another province. It would appear as though professional jealousy kept them within narrow confines. In framing a scheme as proposed, the most contentious detail was as to whether the effect of the examination should be retroactive or not, and though there was considerable difference of opinion on this subject it would appear to be in the best interests that the measure should not be retroactive, and that all who desired to practise in the four provinces in the west should be compelled to take the special examination. Dr. H. H. Chown, dean of the Faculty of Medicine in the University of Manitoba, endorsed much of what Dr. Brett advocated, stating his belief that the medical men of Manitoba believed in the widest possible reciprocity throughout the entire Dominion. Other members of the profession of Winnipeg spoke endorsing the scheme for federation of the four provinces as outlined by Dr. Brett, including Dr. Harry J. Watson of Winnipeg, who pointed out that the establishment of a central examining board for the west would do much in the way of securing reciprocity with Great Britain. A committee was appointed to report on the matter, and delegates were touring the provinces in order to ascertain the individual feeling of the members of the profession in the West.

Donations to McGill University.

One friend of McGill University has recently promised to give $100,000 to McGill University as soon as $500,000 have been raised elsewhere; and another has presented the governors of the institution with an unconditional gift of $25,000. The above announcements were made at a recent meeting of the corporation of the University, and as the authorities have now in hand about $100,000 it was decided for the present to leave in abeyance the plans for obtaining the two millions which the institution needs, and to concentrate all possible efforts towards securing the other $400,000 necessary before the new $100,000 donation can be accepted. The corporation passed at this meeting a resolution deciding that the degree of Doctor of Medicine be conferred *ad eundem* on Dr. W. W. Francis, demonstrator in pathology and assistant demonstrator in clinical medicine.

A Proposed Visit of French-Canadian Physicians to Paris.

A number of the French physicians of Montreal as well as of the English-speaking physicians are looking forward to participating in the Second Congress of Physio-therapeutics, which commences on April 13th next at the Faculty of Medicine, Paris, under the honorary presidency of Professor Landouzy. The following are the names of the officers composing the Canadian committee:—Honorary president: Dr. M. D. Brochu, Quebec. Acting president: Dr. Charles de Blios, Three Rivers. Vice-presidents: Dr. H. Hervieux, Montreal, and Dr. Charles Verge, Quebec. General secretary: Dr. Henri Lasnier, Montreal. Members: Dr. A. Rosseau, Quebec; Dr. J. A. Lesage, Montreal; Dr. L. P. Normand, Three Rivers; Dr. A. Mercier, Montreal; Dr. A. Tourigny, Three Rivers; Dr. E. Asselin, Montreal.

Tuberculosis in British Columbia.

Of the provinces of the Dominion of Canada there is none which is in advance of British Columbia in fighting tuberculosis, and this is in large measure due to the tireless energy displayed by the medical health officer of the province, Dr.

Charles J. Fagan. At the annual meeting of the British Columbia Anti-Tuberculosis Society, held recently in Victoria, reports were received and the progress of the work during the past year and the prospects for the future were discussed. A constitution and by-laws of the society were submitted and adopted. The report of the directors was taken up and discussed for the year 1908. In connexion with this was a report of the work done on the farm, in connexion with the Consumption Hospital at Tranquille, the Alexandra Ranch, as it is called. For the past six months most of the meat used or consumed in the institution, as well as all flour and milk, vegetables and fruit, have been supplied by this farm. Eggs and butter will be supplied in the near future. A new building is now under construction which will accommodate about 60 patients. The financing of the institution has been a difficult and trying proposition, the maintenance fund during the year showing a deficit of $2106. The highest charge to patients is $14 per week and the lowest $3.50, whilst some are admitted free. 21 per cent. of the patients admitted last year paid nothing.

The National Sanitarium Association of Canada.

The eleventh annual meeting of the board of trustees of the National Sanitarium Association was held in Toronto in the latter part of February. The year 1908 was a record year as regards financial contributions to the Muskoka Free Hospital for Consumptives. These included $15,000 given by the city of Toronto. The result of these contributions was the completion of the new administration building at a cost of $16,000, probably the most complete building on this continent. The accommodation for patients had been increased to 104 beds. This made it possible for the management to admit suitable patients promptly on completion of application paper. Hitherto the term of residence of patients had been limited to four months, but with the increased accommodation the board has extended the time to six months, with a privilege of a further extension, if necessary, at the discretion of the physician in charge. The secretary was able to say that not a single patient was refused because unable to pay. The report of Dr. W. B. Kendall, the physician-in-charge of the two institutions, dealt exhaustively with the questions of local and internal management. The past year had brought out many expressions of approval from physicians all over the Dominion of Canada, visitors, and ex-patients. 222 patients had been cared for in the past year, making 1696 treated in the Muskoka Cottage Sanatorium since it was first opened 11 years ago. 258 had been cared for in the Free Hospital in Muskoka within the past year. Dr. A. H. Caulfeild, the new pathologist, presented a most interesting report of the plans put under way at the Muskoka institutions within the past three months. It was believed that no institution on the continent of America had up to the present time effected such complete arrangements for research work. It is intended that the privileges and benefits of the laboratory shall be open to the medical profession generally throughout the province of Ontario. An ex-patient of the Muskoka Cottage Sanatorium gave $1500 for the equipment of the laboratory, and another gentleman has agreed to contribute $1500 a year towards the salary of the pathologist.

Protestant Hospital for the Insane, Quebec.

The annual meeting of the Protestant Hospital for the Insane for the Province of Quebec was held a few days ago in the city of Montreal. The medical superintendent, in his annual report, stated that there were in the hospital on Jan. 1st, 1908, 535 persons, inclusive of two out on trial, and during the year there were admitted to the institution 197 patients, making a total under treatment of 732. The patients who were discharged numbered 109, 36 died and one escaped, leaving in residence at the close of the year 582 patients, exclusive of four out on trial. This was a net increase of 47, as against 26 in the previous year, and represented the largest number that had been under care since the opening of the institution. This large addition was due to a variety of causes, the chief of which was the inferior class in immigrants brought to Canada. Through the action of the Immigration Department 15 inmates of the hospital were deported last year, but a careful examination of records revealed the fact that not less than 7 per cent. of the patients still in residence should never have been admitted into the country, or could or should have been deported. The percentage of discharges based on admissions was 55·3 and the percentage of recoveries 32·2. The mortality rate was only 4·91 based on the total number of patients under treatment, this being the lowest death-rate, except for the years 1892 and 1906, since the opening of the hospital. One patient reported by Dr. Burgess, the superintendent, had to be operated on for illness which required a gastrostomy. He died five days later and the following articles were found in his stomach: 3 bundles of broom fibre, 1 piece of whalebone 8 inches long, 1 piece of insulating tape 7 inches long, 1 bundle of hair, 1 4-inch nail and a piece of wire bound with a string, 1 3-inch nail with a piece of cloth attached, 1 piece of wire 4 inches long, 1 buttonhook, 6 pieces of tobacco-pipe stem, 21 tobacco tags, 31 small pieces of wire, 4 screws, 1 paper fastener, 1 boot eye, 2 plum stones, 1 piece of twisted picture wire, 9 pieces of glass, 9 pieces of iron, 1 steel spring, 1 iron nut, 2 pieces of stone, 27 pins, 5 1-inch nails, 52 2-inch nails, 7 2½-inch nails, 32 3-inch nails, 1 5-inch nail, 1 horseshoe nail, 4 tacks, and 4 hairpins.

Toronto, March 14th.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENTS.)

The Bombay Medical Congress.

THE Bombay Medical Congress was opened by its initiator, Sir George Clarke, the Governor of Bombay Presidency, on Monday, Feb. 22nd. His Excellency delivered a lengthy address in which, after welcoming the delegates, he reviewed the progress in medicine, surgery, and sanitation during recent years. There was a large attendance of civilian and military medical men as well as of assistant surgeons and hospital assistants. The meetings of the various sections, which extended for four days, were held in the University and other buildings, and tents were also available for exhibiting specimens and appliances.

First day.—Professor Ronald Ross, F.R.S., gave the introductory address on Anti-Malarial Measures in India. He stated that, whereas ten years ago when last in India he bemoaned the fact that little anti-malarial work was being done in the country, India was now at last beginning to wake up to the importance of such measures. Papers on the subject of malaria followed, being read by Major S. P. James, I.M.S., and Blackwater Fever was discussed by Captain S. R. Christophers, I.M.S., and Dr. C. A. Bentley. Major James alluded to the increased prevalence during 1908 of malaria in Lahore cantonments (Mian Mir) and attributed it to the exceptionally heavy monsoon, notwithstanding extensive prophylaxis had been undertaken in this station during recent years. The hopeless task of mitigating mosquitoes in India was referred to, and the better results of quinine prophylaxis and employment of mosquito nets were advocated.

Second day.—Professor Kitasato, the eminent Japanese bacteriologist, read a paper on Fleas and Plague in Japan. This was followed by papers on plague prevention in India by Major G. Lamb, Major S. Browning Smith, and Captain W. Glen Liston, all of the Indian Medical Service. Major Lamb drew the following conclusions: that bubonic plague in man was entirely dependent on the disease in rats, and that infection is conveyed from rat to rat, and from rat to man solely by means of fleas; that in itself bubonic plague in man is not infectious and that insanitary conditions have no relation to its occurrence except in so far as they favour the presence of rats; that plague is usually conveyed from place to place by imported rat fleas carried by man on his person or in clothing and that the carrier not infrequently escapes infection himself. Major Browning Smith gave important corroboration to rat mortality as a forewarning agency to plague recrudescence and cited evidence of epidemics where plague cases were preceded by rat mortality, and such epidemics were more numerous in districts previously affected than in those attacked for the first time. Out of epidemics he investigated a history of a forewarning occurred as a rat mortality in about 75 per cent. Out of 120 instances, rat mortality preceded from two to seven days in 55 cases, from seven to 14 days in 32, from two to three weeks in 18, for a month in 13, and for two months in two epidemics. In more than half the cases rat mortality lasted from four to ten days before the first case of plague occurred in man, the average period being

12 to 13 days. Captain Liston in his paper dealt with the subject of plague prevention by directing attention to getting rid of rats and stated that the abatement by extermination or otherwise should be our first line of defence. He recommended the provision of central stores for grain in villages, thus limiting the food-supply of rats, and also recommended the early removal of all kinds of refuse from habitable places for the same reason. He referred to the present measures in force, isolation of plague patients, disinfection, and evacuation of infective houses as costly and less effective than the measures he proposed, and he finally recommended inoculation as an important line of defence. The debate on the three papers mentioned, although not adding much to what was already known on plague in this respect, emphasised the importance of plague prophylaxis and gave rise to keen debate in the section concerned, as the writers of the papers are all eminent authorities devoting their entire services to the Government of India in the subject of plague prevention. Dr. F. G. Clemow described the methods adopted in India to prevent exportation of plague and cholera infection, and the international responsibilities of the Indian Government in this respect in so far as the Moslem pilgrimages were concerned. Many thousand Indian Moslem pilgrims left annually for Arabia and have been the principal means of carrying cholera into that country, which had then become the focus of widespread epidemics to other parts of the world. In recent years considerable anxiety had been felt lest plague should spread in a similar manner. In the surgical section the more important papers were devoted to the discussion of cataract operations, Captain A. E. J. Lister, I.M.S., who has done good work in this subject at Meerut as well as in the Punjab, opening the debate, and the intracapsular cataract operation of Smith of Jullundur was also discussed. A paper by Sir Lauder Brunton on Snake Venom and Means of Prevention was read by Surgeon-General P. H. Benson, and this was followed by Major Lamb and Major F. Wall, I.M.S., with papers on Snake Bite and the Treatment of Snake Poisoning. Captain E. F. Gordon Tucker discussed Operation for Intractable Ulceration of the Colon.

Third day.—Khan Bahadur Choksy, C.I.E., read a paper on the Symptomatic Treatment of Plague, and a long debate followed. The Leishman-Donovan bodies were discussed in a paper on Kala-Azar in Madras, by Major C. Donovan, I.M.S. Dr. R. Row related a stage of flagellated development of the parasite of Delhi boil, somewhat similar to that of the Leishman-Donovan body, and made suggestive inferences of the respective organisms being different varieties. In the surgical section a paper on Litholapaxy by Surgeon-General H. W. Stevenson and one on Chronic Gastric and Duodenal Ulcer were the subjects of discussion. In the medical section a paper on Beri-beri was read by Dr. Braddon and the discussion was opened by Professor W. E. Musgrave. Professor Shiga of Japan read a paper on Leprosy and another on the nastin treatment of that disease. A communication on the Etiology, Diagnosis, and Prevention of Enteric Fever in India was presented by Colonel D. Semple, R.A.M.C., director of the Institute of Preventive Medicine in India, and read in his absence. Following this was a paper on Hill Diarrhœa, by Dr. A. G. Newell, and one on the Maternal Death-rate by Lieutenant-Colonel M. Collie, I.M.S. In the section dealing with hygiene and sanitation the proceedings were chiefly confined to the consideration of sewage disposal, and papers were read by Mr. Maxwell on the Disposal of Sewage, Mr. G. J. Fowler on Observations on the Effects of the Discharge of Septic Tank Sludge in a Tidal Estuary, Mr. W. J. Dibdin on the Primary Treatment of Sewage, and Mr. W. D. Scott-Moncrieff on Some Recent Aspects of the Sewage Problem.

Fourth day.—Professor Musgrave from Manila opened a discussion on Mycetoma with a paper on Streptothricosis with special reference to the Etiology of Mycetoma, and this was followed by papers by Dr. N. F. Surveyor on Mycetoma, and Dr. Bocarra on the Distribution, Pathology, and Bacteriology of Mycetoma. In the sanitary section Dr. J. A. Turner, medical officer of health of Bombay, read an exhaustive paper on Sanitation in India, and Major J. W. Cornwall, I.M.S., followed with Disinfection of Native Habitations, and Lieutenant-Colonel W. C. Beevor, R.A.M.C., with a paper on the Disposal of Refuse in Hill Stations, in which he condemned trenching of excreta and alluded to the great assistance he had received in sanitation from General Kitson in the employment of a bactericidal method which he employed at Dalhousie. He trusted no other method but this, except complete incineration.

Social functions.—Space forbids lengthy notice of these beyond mentioning that the Bombay Medical Union were "at home," and the Governor of Bombay, the President, and officials of the Congress, besides members and many visitors, were present and hospitably entertained. There was an exhibition of pathological and microscopical preparations and also coloured drawings, and a good collection of snakes by Major Wall, I.M.S. Evening lantern lectures were well attended, and on the last day a visit was made to the Parel bacteriological laboratories, where plague and other research is carried out. The proceedings terminated with a dinner attended by the Governor of Bombay, Surgeon-General Sir G. Bomford, Professor Ronald Ross, Professor Musgrave, and over a hundred sat down. The Congress has been a notable one and its success should favour a repetition in the near future.

Present Position of Plague in India.

The course followed by plague in India since the first outbreak in the summer of 1896 is worth some detailed notice at the present time, when the disease has apparently lost its virulence. No one can venture to say that it will not reappear in epidemic form once more, but for the moment there are no signs of serious recrudescence. In the year 1896 the deaths reported from plague in the Bombay Presidency were 2219 and all but a few of these occurred in the city of Bombay itself. In the following year the mortality rose to nearly 54,000, all but a few hundred cases being in the Bombay Presidency, though the city returns were only 11,000. Thereafter there was a slow but steady spread of plague inland. Bengal became seriously infected in 1900, the deaths in that province during the year being actually more than in Bombay. Mysore and Hyderabad States suffered, and scattered cases were reported from the Madras Presidency, the United Provinces, and the Punjab. In 1901 the returns suddenly sprang up to 283,000 deaths, and in 1902 the epidemic gained in force. The mortality was 584,000 and the Punjab accounted for nearly one-third of this. In 1903 and 1904 the Bombay Presidency was again terribly stricken, but the Northern Province was even in a worse case. In the latter year the deaths from plague in all India were roughly 1,144,000, the Punjab reporting 396,000 and Bombay about 224,000, the United Provinces coming third with 179,000. In 1905 over a million deaths occurred, and this was the year in which the United Provinces suffered most, the returns being about 384,000, as against 335,000 in the Punjab. In 1906 there was an extraordinary decrease in plague mortality, the total being only one-third of that of the previous year. Medical experts could give no satisfactory explanation of this sudden fall in the returns, but it was hoped that the plague had expended its virulence and that the worst periods had been tided over. In the spring and early summer of 1907, however, the disease swept over Upper India in renewed strength, and the deaths in the year eventually reached the appalling total of nearly 1,316,000. Of these, 608,000 occurred in the Punjab and 328,000 in the United Provinces. Returns from British districts alone are here given, as those from native States are inaccurate, but several thousands must be added from the latter to make up the full bill of mortality. After this terrible experience of 1907 the Government and its medical advisers might well have been in despair; it seemed, indeed, that plague in its worst epidemic form had scarcely any limitations. But again there came an inexplicable lull. In January, 1908, the deaths were 13,880 and they rose to nearly 32,000 in March. Then an improvement took place everywhere and by the end of June the annual epidemic had spent its force. The year closed with 149,000 deaths, or less than one-eighth of the mortality in the year preceding. The toll for the population in the 12½ years since plague first appeared in Bombay may be put at 6,200,000 deaths, the actual figures officially recorded being a few thousands below these, but there must necessarily have been many unreported cases. So far, in 1909 the deaths have been numbered by hundreds instead of thousands and we may confidently hope that the current year will be one of comparatively small mortality.

Septic Tanks in Hooghly Mills.

In 1904 the government of Bengal appointed a special committee to report on the existing septic tank installations at the mills on the river Hooghly, and on the means which

should be adopted to render them efficient and free from objection. The committee after a careful investigation reported in December of that year, and made several recommendations which were considered at the time by those interested. In the spring of 1906 the local government followed up the report by the enactment of rules under the Indian Factory Acts. These rules provided for the proper supervision and cleansing of the tanks, and for the sterilisation of the effluent by the addition to each gallon of five grains of chlorinated lime. This addition was to be made before the effluent was allowed to be discharged into the river. There was one suggestion, however, upon which the septic tank committee heard evidence that the government did not take up. This was that the effluents, instead of being discharged into the river, should be passed through the mill boilers as feed water. The septic tank committee supported this idea, but the mill-owners were apprehensive that it might cause trouble with their workmen. It has been recently revived by the government of Bengal, which has pointed out that the prescribed rules are not properly observed. The position is in fact such that, if the effluent cannot be passed through the boilers, a special septic tank inspector will be appointed by the government under the Factory Acts. On this proposal being referred to the committee of the Bengal Chamber of Commerce it consulted the Indian Jute Mills' Association concerning it. Mill-owners are, it finds, still apprehensive that if they were to use the effluents in the boilers they would have trouble with their workpeople. On the other hand, they see no objection to the appointment of an inspector if care be exercised in making the selection. The committee of the chamber has placed this expression of opinion before the government.

March 3rd.

Obituary.

JAMES HURD KEELING, M.D. EDIN., F.R.C.S. ENG.

Dr. James Hurd Keeling, whose death in his seventy-seventh year occurred on March 13th, had been for many years a prominent practitioner in Sheffield. He was born in Malta and coming to England when still a child, the son of a Wesleyan minister, was educated at Woodhouse Grove, a well-known Wesleyan school near Leeds. Thence he went to the University of Edinburgh to study medicine, graduating M.D. in 1852. In the same year he took the diploma of M.R.C.S. Eng., and continued his medical studies in London, Vienna, and Paris. In 1854, on the outbreak of the Crimean war, Dr. Keeling went out to the seat of war to serve as a surgeon with the Turkish army. For his services in this capacity he was rewarded with the Imperial Order of the Medjidieh. On returning home he practised at Stavely and while there, in 1858, applied for the post of house surgeon to the Sheffield Infirmary General, as it was then called. He failed in his application, but he then settled in Sheffield where he remained for the rest of his life. In 1860 he was appointed lecturer on medical jurisprudence at the Sheffield School of Medicine on the understanding that toxicology should be dealt with by a chemist, and four years later he was made lecturer on physiology. He was a leading figure in the movement for the reconstruction of the school, which took place in 1865. He resigned the physiology lectureship in that year, being, in conjunction with Dr. Aveling, appointed lecturer on midwifery and diseases of women. This lectureship he continued to hold for 32 years. One year previously Dr. Aveling and himself had been appointed medical officers of the newly founded Hospital for Women, afterwards the Jessop Hospital. In 1867 Dr. Keeling was elected surgeon to the public hospital and dispensary, now the Sheffield Royal Hospital. In 1869 he obtained by examination the Fellowship of the Royal College of Surgeons of England. He retired from the active practice of his profession in 1906, when his colleagues in the town were anxious to present him with a testimonial, but this Dr. Keeling would not hear of.

Dr. Keeling never contributed widely to medical literature, although he spoke much at various medical societies. He was essentially one whose good deeds are done in secret, and the *Sheffield Telegraph* of March 15th recalls how at hospital meetings he was noted for the rebukes he administered to local orators who "indulged in too much flattery about his own and other medical men's services to the medical institutions." In a speech to the Jessop Hospital governors in 1898 he is reported as having said "that doctors serve on the honorary staffs of hospitals simply and solely for the personal benefit they can derive thereby, ... that the patients also simply attend hospitals for what selfish benefit they can get, and that the rich keep up hospitals principally at the dictation of an enlightened self-interest which tells them that it is the best way of securing good doctors for themselves when ill, and in some small degree for the satisfaction, also selfish, which comes by being benevolent." For all this seeming cynicism, he was one of the most generous of men and long after his official connexion with the Medical School of Sheffield had ceased he continued to take a keen interest in its welfare. It was he who under the veil of "A Sheffield Citizen" equipped at a very considerable cost a new pathological department, and his contributions to the building and endowment fund of the University were most generous.

JOHN AMBROSE, M.D. R.U.I., L.R.C.S. EDIN.,
LIEUTENANT-COLONEL, A.M.S., RETIRED.

THERE was a large attendance at Devizes (Wilts) Cemetery on March 3rd on the occasion of the funeral of Lieutenant-Colonel John Ambrose, A.M.S. (retired). The deceased officer was in his sixty-eighth year and died suddenly from syncope at his residence, Southgate Lodge, Devizes, on Feb. 27th. He received his medical education at Queen's College, Cork, and graduated M.D. R.U.I. in 1863, having obtained the L.R.C.S. Edin. qualification the previous year. Shortly after graduating he entered the Army Medical Department and being attached to the 58th Regiment served for several years in India. Lieutenant-Colonel Ambrose had been resident at Devizes for the past 25 years, and was for the greater portion of that time medical officer in charge of the Station Hospital at Devizes Barracks (Wilts Regimental Depôt). He was very popular and his death is much regretted. He leaves a widow, one married daughter, and two sons, one of whom is Mr. Charles Ambrose, the well-known black-and-white artist.

EDWARD NOBLE EDWARDS, M.R.C.S. ENG., L.S.A., V.D.

THE death occurred at Chipperfield, King's Langley, Hertfordshire, on March 11th, of Mr. Edward Noble Edwards. For nearly 40 years Mr. Edwards practised at 3, Goldsmid-road, Brighton, succeeding at that address the late Dr. Whately. It was only quite recently that Mr. Edwards relinquished his professional practice, and his health commenced to fail very soon after he left Brighton. Receiving his medical training at Guy's Hospital, Mr. Edwards became Licentiate of the Society of Apothecaries in 1866, and took the diploma of M.R.C.S. Eng. a year later. He was President of the Brighton and Sussex Medico-Chirurgical Society in 1886. He was an enthusiastic Volunteer. He joined the 1st Sussex Artillery in 1876 and retired early in 1902 with the rank of colonel, and later was given the Volunteer decoration. He was also a prominent Freemason. He was Worshipful Master of the Royal Clarence Lodge at Brighton in 1898 and received Provincial honours (Senior Grand Warden) in 1903.

THOMAS ORLANDO MAYOR, M.R.C.S. ENG., L.S.A.

Mr. Thomas Orlando Mayor died at his residence, Apsley-road, Clifton, on March 5th, in his seventy-second year. The deceased, who received his medical education at St. George's Hospital, qualified M.R.C.S. Eng. and L.S.A. in 1859. He had been for the past 25 years the certified factory surgeon for Bristol and district and was very popular with employers and employed, in fact with all with whom he was brought in contact. Mr. Mayor was honorary surgeon to the Redland branch of the Clifton Dispensary and also honorary surgeon to the St. Raphael's crèche. Mr. Mayor continued to perform his professional duties until within a few days of his death. He will be much missed in Bristol and Clifton, where much sympathy is felt for his children.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—We are glad to be able to correct the announcement of

the death of Dr. Noesske of Kiel, which appeared in our issue of March 20th under this heading.—The deaths of the following eminent foreign medical men are announced:—Dr. William B. Armstrong, assistant professor of anatomy in the Atlanta College of Physicians and Surgeons.—Dr. Frederick I. Knight, formerly professor of laryngology in Harvard University.—Dr. Daniel B. Brower, professor of neurology and psychiatry in the Rush Medical College, Chicago.—Dr. William T. Bull, professor of surgery in the New York College of Physicians and Surgeons.—Professor Erich Paulun, the head of the German-Chinese Medical School at Shanghai.—Dr. Motet, member of the Academy of Medicine of Paris.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—J. M. Fishe (Section II.), Royal Free Hospital; J. A. Koch (Sections I. and II.), Amsterdam; W. N. Pickles (Section II.), Leeds; and N. S. Shenstone (Sections I. and II.), New York.
Medicine.—J. Bramley-Moore (Section II.), University College Hospital; W. C. D'Eath, Charing Cross Hospital; H. A. Hancock (Section II.), London Hospital; F. O'Neill (Sections I. and II.), Durham and Charing Cross Hospital; P. N. Panton (Sections I. and II.), Cambridge and St. Thomas's Hospital; N. S. Shenstone (Sections I. and II.), New York; and S. H. Watton (Section II.), Manchester.
Forensic Medicine.—J. Bramley-Moore, University College Hospital; H. A. Hancock, London Hospital; F. O'Neill, Durham and Charing Cross Hospital; P. N. Panton, Cambridge and St. Thomas's Hospital; and N. S. Shenstone, New York.
Midwifery.—W. C. D'Eath, Charing Cross Hospital; F. O'Neill, Durham and Charing Cross Hospital; P. N. Panton, Cambridge and St. Thomas's Hospital; G. S. Richardson, Leeds; and N. S. Shenstone, New York.

The diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery:—W. C. D'Eath, J. M. Fishe, W. N. Pickles, N. S. Shenstone, and S. H. Watton.

FOREIGN UNIVERSITY INTELLIGENCE.—*Marburg:* Dr. Ferdinand Sauerbruch, *privat-docent* of Surgery, has been granted the title of Professor.—*Munich:* Dr. Albert Hasselwender has been recognised as *privat-docent* of Anatomy.—*Toronto:* Dr. Graham Chambers has been appointed Assistant Professor of Medicine; and Dr. Walter McKeown has been appointed Assistant Professor of Surgery.

THE Academy of Medicine of Paris has elected Dr. Cranwell of Buenos Ayres and Dr. Jonnesco of Bucharest as foreign corresponding members.

DONATIONS AND BEQUESTS.—The late Mr. Edwin Gayford has left by will £1000 to the Metropolitan Hospital Sunday Fund.

DEATH OF A CENTENARIAN.—Ann Williams, who died in the Gower Workhouse, near Swansea, on March 20th, was 104 years old. She was blind, but had otherwise retained her faculties.

SMALL-POX AT BRISTOL.—Reassuring news comes from Bristol in regard to the outbreak of variola, of which we described the origin. During last week there was only one notification of the disease, and seven of the eight patients infected from the original case are now convalescent. The medical officer believes that danger from other "contacts" is now at an end.

UNIVERSITY OF OXFORD.—The Radcliffe prize for 1909 has been awarded by the Master and Fellows of University College, upon the report of the examiners, to Mr. Arthur Frederick Hertz, D.M., formerly Demy of Magdalen College. The subject of Dr. Hertz's dissertation was the Physiology and Pathology of the Movement of the Intestines.

THE NATIONAL LEAGUE FOR PHYSICAL EDUCATION AND IMPROVEMENT.—The next address of the course that is being delivered under the auspices of this League will be given by Professor W. J. R. Simpson, on March 31st, at 4 o'clock, at 25, Kensington Gore, London, S.W., by permission of Mrs. R. A. Yerburgh. Colonel T. H. Hendley, C.I.E., will occupy the chair.

THE WILTS COUNTY COUNCIL AND THE MEDICAL INSPECTION OF SCHOOL CHILDREN.—At a recent meeting of the Wilts county council a scheme for the medical inspection of school children, involving the appointment of two whole-time medical officers, was approved.

PRESENTATION TO A MEDICAL PRACTITIONER.—At a large gathering held at the council chambers of the Municipal Buildings, Taunton, on March 11th, under the presidency of the mayor, Mr. George William Rigden, M.R.C.S. Eng., L.S.A., was presented with an illuminated address (containing the names of nearly 400 subscribers) and a cheque for a substantial amount as a token of respect and esteem on the occasion of his impending departure from Taunton.

THE PAYMENT OF FEES TO MEDICAL MEN CALLED IN BY MIDWIVES.—At a meeting of the Staines board of guardians on March 16th Dr. W. H. Haslett submitted the following motion:—

That in cases of instrumental and abnormal labour this board, having ascertained on inquiry that the midwife acted in a *bonâ-fide* manner in sending for a medical man other than the Poor-law medical officer, pay the former a fee not exceeding one guinea.

A member of the board suggested that the words "was justified" should be substituted in the wording of the motion in place of "acted in a *bonâ-fide* manner." The board adopted the suggestion and the motion was then carried unanimously.

THE NATIONAL PHYSICAL LABORATORY.—The National Physical Laboratory at Bushy House, Teddington, was thrown open for inspection on March 19th, when Sir Archibald Geikie, President of the Royal Society and chairman of the general board of the National Physical Laboratory, received the visitors. On the same occasion the report of the executive committee was submitted to the general board. The report, which contains a summary of the work done at the laboratory during the year 1908, showed that progress had been made with regard to electrical units and standards, preliminary studies having been carried out respecting a new method for determining the ohm in absolute measure. Reference is made in the report to the fact that the meteorological department of the laboratory, though housed in the new building prepared for it, is not yet complete in equipment and that further tests on the arrangements for maintaining a constant temperature are required. The director of the laboratory, Dr. R. T. Glazebrook, contributes a statement on the work of the year, and an appendix contains a description of the equipment of the new department for testing mercurial thermometers.

CENTRAL MIDWIVES BOARD.—A meeting of the Central Midwives Board was held at Caxton House, Westminster, on March 18th, with Dr. F. H. Champneys in the chair. A letter was received from the Registrar-General as to the Board's request for the addition of a new column to the birth register for the registrars to add the name, status, and address of the person who delivered the child. In this letter the Registrar-General said that these particulars, although no doubt useful, were not among the most desirable additions that could be made; it appeared to the Registrar-General that this information might be inserted in the notice of birth furnished to certain medical officers of health. Letters from Dr. A. G. R. Foulerton, county medical officer of East Sussex, as to medical practitioners covering the practice of midwives, were considered. The Board decided that the secretary be instructed to draft a case for the opinion of the Privy Council as to whether a certified midwife personally delivering a woman in childbirth is acting as a midwife where a medical practitioner has been engaged to attend the case. A report was considered from Dr. J. C. Thresh, county medical officer of Essex, to the Essex education committee on the supply of midwives in that county. The Board directed that Dr. Thresh be thanked for the presentation of his report.—The eighth meeting of the committee was held on Wednesday, March 24th, when the following witnesses attended and gave evidence: Miss Wesley, matron of St. George's-in-the-East Infirmary, on behalf of the Poor-law Infirmary Matrons' Association; Dr. C. T. Parsons, medical superintendent, Fulham Infirmary, on behalf of the Infirmary Medical Superintendents' Society; and Dr. Henry Handford, county medical officer of health of Nottinghamshire.

THE TAUNTON AND SOMERSET HOSPITAL.—At the close of 1908 there was an adverse balance of £1473 against the Taunton and Somerset Hospital. Since then special donations of £1500 have been received by the treasurer of the institution, but it has been stipulated that one gift of £500 shall be invested. There is accordingly still a deficit of nearly £500.

MIDWIVES ACT COMMITTEE.—The seventh meeting of the Departmental Committee, appointed by the Lord President of the Council to consider the working of the Midwives Act, was held at the Privy Council Office on March 17th. The following witnesses attended and gave evidence: Dr. E. W. Hope, medical officer of health, Liverpool; Mr. G. H. Fosbroke, medical officer of health, Worcestershire; and Dr. J. R. Kaye, medical officer of health, West Riding, Yorkshire.

LITERARY INTELLIGENCE.—Ebstein's "Annual Report of Internal Medicine," the first volume of which (1909) is now complete, will be edited for the future by Dr. Werner Klinkhardt, Leipsic. The second volume containing the years 1902–03 will be ready in the spring of this year; then the volume of 1908 will follow and afterwards the rest. Authors are asked to send reprints of their papers, as far as pertaining and of interest to internal medicine, to Oberarzt Dr. Schreiber, 1, Beaumontstr., Magdeburg.

THE NORWOOD SANATORIUM.—We have received a copy of the third annual report of this sanatorium for the treatment of alcohol and drug inebriety. It is an interesting document. The treatment of inebriety by the hypodermic injection of strychnine and atropine either with or without the exhibition of a tonic containing the same drugs has been employed, and with a certain modicum of success, for the past 20 or more years by medical men of repute and by others. For various reasons the treatment has been abandoned now by the majority of medical men who have had large experience in dealing with chronic inebriety, so that an account of a more or less systematic trial of this method extending over three or four years should attract real attention. Dr. Francis Hare, the medical superintendent of the Norwood Sanatorium, after some interesting general remarks upon the classification of cases of inebriety, detailed the method of employing the strychnine and atropine treatment as it is practised at Norwood, where it is the special course of treatment to which patients are subjected as a rule. The figures show that between September, 1905, and Dec. 31st, 1908, 349 patients have been admitted. Of these, seven remain, 341 were discharged, 34 were non-alcoholic cases for whom the routine treatment was not attempted, and one died. Of the 308 alcoholic cases discharged (including the death), 87 were for various reasons not treated by the special course; and of the residue, nine were lost sight of on leaving the institution, leaving 212 cases which could be followed up. 103 of these cases were, when last heard of, total abstainers, and of this number 58 have abstained for a year or more. Dr. Hare's report also contains some rather striking remarks on the continued administration of alcohol to the alcoholic patient after admission to the sanatorium. He considers that it is impossible to prevent the occurrence of delirium tremens and alcoholic epilepsy without the administration of alcohol in some form. During the two and a quarter years ending October, 1907, there occurred in the sanatorium 12 cases of delirium tremens, two of alcoholic epilepsy, and one in which both complications were present. He advocates a tapering-off process, extending sometimes over a week. He justifies his view by the fact that since October, 1907, when the tapering-off process was adopted, there has been no case of delirium tremens in the institution and only one of alcoholic epilepsy. But as against this view we find by a reference to the medical section of Prison Statistics (1906) that delirium tremens occurred in less than ½ per cent. of the 63,000 persons sent to prison for drunkenness with whom sudden and complete withdrawal of alcohol was practised. Some of these prisoners were no doubt week-end or occasional "drunks," but in licensed inebriate retreats when alcohol is suddenly stopped the percentage of these complications arising after admission is either extremely small or non-existent. It is satisfactory to read that Dr. Hare and his committee have had no cases of delirium tremens and only one case of alcoholic epilepsy during the past 15 months under their care.

MILK POLLUTION.—Dr. H. B. Mapleton, the medical officer of health of the Newton Abbot rural and urban district, in his annual report for 1908 urges that the source of milk pollution and the means by which it can best be obviated is a subject that should find a place in every school curriculum, especially in villages, where many of the children will in after life be connected with dairy farming in some way or other.

THE SEWAGE OF FROME.—A Local Government Board inquiry was held at Frome (Somerset) on March 17th into the application of the Frome urban district council to borrow £7556 for the purpose of sewage disposal. The work which it is now desired to carry out represents the second portion of a scheme, the total cost of which is estimated at £17,594. The amount expended on the first portion was £5556.

THE LATE DR. W. L. WINTERBOTHAM.—A portrait of the late Dr. W. L. Winterbotham, J.P., is to be placed in the Council House at Bridgwater, and it is hoped that this memento of the deceased will perpetuate his memory in the town where he spent a large portion of his long life and to whose interests he devoted himself so strenuously.

IRISH MEDICAL SCHOOLS AND GRADUATES' ASSOCIATION.—The festival dinner of this association was held on March 18th, at the Hotel Cecil, Strand, Dr. F. A. de T. Mouillot, the President, being in the chair. Covers were laid for over 200. After the usual loyal toasts had been duly honoured, Dr. J. J. Macan, chairman of the council of the association, presented to the President Lieutenant John Smith McCombe, R.A.M.C., who had been awarded the Arnott Memorial Medal. The President amid much cheering handed the medal to the recipient who then in a few words thanked the association for the honour conferred on him. The medal was awarded to Lieutenant McCombe in the following circumstances. On June 28th, 1908, a boy fell into the River Thames opposite the officers' mess of the Royal Army Medical Corps at Millbank when the tide was nearly full and the water very muddy. Lieutenant McCombe jumped into the river and sought by diving repeatedly to rescue the boy, but unhappily in vain, though he did not relax his efforts until he was so exhausted that he had himself to be assisted from the muddy stream. Dr. James Macdonald, in proposing the toast of "Our Defenders," spoke very seriously of the danger in which he considered that the country was by its present unprepared state. The toast was acknowledged by Lieutenant Gerald F. Abraham, R.M.L.I., by Sir Alfred H. Keogh, Director-General of the Army Medical Service, and by Lieutenant-Colonel John J. de Z. Marshall of the medical service of the Territorial Force. The toast of "Our Guests" was eloquently submitted by Dr. L. S. McManus, one of the Direct Representatives on the General Medical Council, who in the course of his remarks paid a high tribute to the journalistic and literary ability of Dr. Dawson Williams, the editor of the *British Medical Journal*. This toast received a suitable reply from Surgeon-General W. L. Gubbins, Deputy Director-General of the Army Medical Service. Sir Robert Ball then proposed "The Association," and in an inimitable and witty speech kept his audience amused and interested while he narrated racy reminiscences of his old Dublin days. After the President had duly replied, dwelling especially on the value of the social side of the association, his health was proposed by Dr. W. Edgecombe. This having been responded to the company then separated.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Medical Inspection of School Children.

THE deputation of local authorities to the Prime Minister on March 18th instanced the medical inspection of school children as one of the heads under which educational expenditure was increasing. An increased grant from the Treasury was asked for. Mr. ASQUITH, in reply, said that he was told that the maximum burden which medical inspection could impose on the whole country was £260,000. He added that the cost had not reached anything like that sum at present, and about a farthing education rate would cover the

maximum of the charge. The Prime Minister's view was that relations between local and imperial taxation could not be treated piecemeal.

Reference is also made to the medical inspection of school children in the report of the Board of Education for the year 1907-08. In November, 1907, the Board issued a memorandum explaining how in its opinion medical inspection should be regulated. The experience which has been gained since the Act came into force has confirmed the Board in the belief in the soundness of the principles which had been adopted in regard to this matter. At the same time the Board is aware that the application of these principles must vary according to the special circumstances and needs of different localities, and appreciates the fact that the administration of the Act involves many practical problems which can only be solved by experience. The report expresses satisfaction that substantial progress in the organisation of the work of medical inspection is being made throughout the country, and that with few exceptions local education authorities are doing their best to perform the duties in this respect which Parliament has imposed on them.

The Accounts of the General Medical Council.

The accounts of the General Medical Council and of the Dental Registration Fund for the year 1908 have been presented to both Houses of Parliament.

Public Health Officers Bill.

Notice of a motion for the rejection of the Public Health Officers Bill has been given by Mr. A. H. SCOTT. This Bill was recently introduced by Sir WALTER FOSTER.

The Oaths Bill.

The Oaths Bill, which is intended to facilitate the taking of the oath with uplifted hand, has received a second reading in the House of Commons. No opposition was taken to the measure, which will now go to one of the Standing Committees for consideration.

The Administration of Anæsthetics.

It is the intention of Mr. COOPER at an early date to present a Bill in the House of Commons "to regulate the administration of anæsthetics and to make regulations relative thereto and to amend the Medical Acts."

Small-pox at Bristol.

The outbreak of small-pox at Bristol is the subject of several questions which either have been addressed or will be addressed to the President of the Local Government Board in the House of Commons. Mr. CAVE has given notice that he will ask "whether, in spite of the advice of the Board's inspector, the board of guardians at Bristol refused to make special arrangements for the vaccination of unvaccinated children and for revaccination; whether, on the Local Government Board itself instructing the vaccination officer to provide special facilities, the health committee refused to permit the issue by their medical officer of bills notifying the names of the vaccinators and the places where they would attend for vaccinations; how many cases of small-pox have already occurred in the city and how many have proved fatal; and what steps the Local Government Board proposes to take in the matter."

Nurses' Registration (No. 2) Bill.

The Nurses' Registration (No. 2) Bill which has been introduced into the House of Commons by Mr. FINDLAY is framed quite differently from the measure dealing with the same subject presented by Mr. MUNRO FERGUSON. The text of Mr. FINDLAY'S Bill has now been published. It proposes to set up a Central Board for the registration of nurses in the United Kingdom, which is to consist of 27 persons. A large element on the Board will consist of matrons of hospitals and nurses, or persons selected by them. A registered medical practitioner, according to the scheme of the Bill, will be appointed by each of the following bodies: the Privy Council, the General Medical Council, the Medico-Psychological Association, and the Central Hospital Council. The registered nurses of the United Kingdom are to elect a medical man and three medical practitioners are to be appointed by the British Medical Association. A provisional constitution is provided for in order that certain initial work may be carried out.

The duties of the Central Board are laid down in Clause 9. Its proposed duties and powers are set forth as follows:—"(1) To frame rules—(*a*) regulating its own proceedings and the times for holding its meetings; (*b*) regulating the issue of certificates of registration and the conditions of admission to the register of nurses; (*c*) regulating the course of training and conduct of examinations and the remuneration of the examiners; (*d*) regulating the admission to the register of persons already in practice as nurses at the passing of this Act; (*e*) deciding the conditions under which a nurse may be suspended from practising as a registered nurse; (*f*) defining the particulars required to be given in any notice under this Act. (2) To appoint examiners and inspectors. (3) To decide upon the places where, and the time when, examinations shall be held. (4) To publish annually a register of nurses containing the names, addresses, and record of training and work of nurses who have been duly registered under this Act. (5) To decide upon the suspension or removal from the register of the name of any nurse for disobeying the rules and regulations from time to time laid down under this Act by the Central Board from conduct disgraceful in a professional aspect, or for other misconduct, and also to decide upon the restoration to the register of the name of any nurse so suspended or removed. (6) To take proceedings against persons guilty of offences under this Act. (7) To issue and cancel certificates of registration, and generally to do any other act or duty which may be necessary for the due and proper carrying out of the provisions of this Act. All rules framed under this section shall be valid only if approved by the Privy Council: Provided that the first duty of the Central Board on its establishment shall, subject to the making of the rules for the regulations of their own procedure, be the formation of registers and the regulation of the admission thereto of persons entitled to be registered in accordanec with this Act."

Provision is made for the registration of existing nurses, but at the expiry of three years the Bill proposes that admission to the register should only be gained by persons who produce evidence satisfactory to the Central Board of training in the wards of an approved hospital or Poor-law institution, and pass the examination prescribed by the Board, as well as complying with other requirements. If the Government sets up a select committee to consider the question of the registration of nurses it is likely that all the Bills dealing with the subject will be sent to it for consideration.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 17TH.

Influenza in the House.

Mr. PIRIE asked the First Commissioner of Works whether he was aware that upwards of 40 Members of the House were at present laid up with influenza and that the majority of them attributed their illness to the bad ventilation of the House of Commons, and whether he would therefore consider the desirability of adopting a more natural system of ventilation than existed at present.—Mr. L. HARCOURT replied: I much regret the melancholy state of affairs conveyed in the honourable Member's question, but I am sorry to find that the proportion of 6 per cent. of influenza sufferers is not uncommon in other buildings and professions which are subject to the most natural systems of ventilation. I do not consider myself the author of the existing or any other system.

Mr. VERNEY asked whether a committee sat on the subject of the ventilation of the House in 1903 and considered the system in use very objectionable. Did they not press for an immediate inquiry?—Mr. HARCOURT: The inquiry has been held. A number of recommendations were made all of which I have carried out.

The Dairies, Cowsheds, and Milkshops Order of 1885.

Mr. WALTER GUINNESS asked the President of the Local Government Board whether he could state how many of the councils of boroughs and urban and rural districts respectively had neglected to make any regulations under the Dairies, Cowsheds, and Milkshops Order of 1885.—Mr. BURNS said in reply: The number of boroughs and other districts in which regulations are not in force is as follows: boroughs, 14 out of 327; other urban districts, 71 out of 814; and rural districts, 78 out of 666.

THURSDAY, MARCH 18TH.

The Tuberculosis (Ireland) Act.

Captain CRAIG asked the Chief Secretary to the Lord Lieutenant of Ireland whether he could state the number of local authorities in Ireland which had put into operation the Tuberculosis (Ireland) Act, 1908.—Mr. BIRRELL answered: The honourable and gallant Member's question is premature. The Act does not come into operation until July 1st next.

Prison Medical Officers.

Mr. SNOWDEN asked the Secretary of State for the Home Department how many women inspectors of prisons there were; how many prison medical officers were women; and whether, in view of the proportion of women prisoners, he would consider the appointment of additional qualified women to act in each of the capacities mentioned.—Mr. HERBERT SAMUEL (for Mr. GLADSTONE) answered: There is one woman inspector who is well able to discharge all the duties of an inspector in relation to prisons where women are detained. None of the prison medical officers are women, but the woman inspector has medical qualifications. With regard to the appointment of women medical officers of prisons, the point will be considered.

MONDAY, MARCH 22ND.

Food Preservatives.

Mr. WATT asked the President of the Local Government Board whether he was aware that under the regulations issued by his department under the Public Health (Regulations as to Food) Act, 1907, the use of chemical preservatives was not prohibited in all cases; and whether he would instruct that in future salt should be the only preservative allowed.—Mr. BURNS said in reply: So far as the application of chemical preservatives to imported meat is concerned the regulations only deal with cases of tripe, tongues, and kidneys. In view of the importance of public health and the trade interests concerned, restrictions of the kind referred to in the question could not be imposed generally without considerable preliminary investigation. I am, however, causing inquiries to be made with regard to the present position of preservatives in certain foodstuffs.

TUESDAY, MARCH 23RD.

The Distribution of Food in Old Newspapers.

Mr. COURTHOPE asked the President of the Local Government Board whether he had power to issue regulations dealing with the packages, bags, wrappers, &c., in which articles of food were supplied by retailers to their customers; and whether he would consider the advisability of prohibiting the use of old newspapers for the purpose of wrapping meat and other articles of food.—Mr. BURNS answered: The Public Health (Regulations as to Food) Act, 1907, enables the Local Government Board to make regulations authorising measures to be taken for the prevention of danger arising to public health from the distribution of articles of food intended for sale for human consumption, but I have no information which on grounds of public health would justify regulations of the kind suggested in the last part of the question.

Foreign Dairies and Cowsheds.

Captain MORRISON BELL asked the President of the Local Government Board what the conditions and regulations were as to cleanliness and

management of dairies and cowsheds which applied to the districts from which the imports of fresh milk and cream were derived.—Mr. BURNS said in reply: The information in my possession is not sufficient to enable me to say definitely what are the conditions as to cleanliness and management in the dairies and cowsheds abroad or as to the extent to which foreign regulations are enforced in these places. I caused inquiries, however, to be made last year regarding the methods adopted at the single creamery in France from which all the fresh milk imported into this country appears to be obtained and from which also a considerable quantity of cream is imported. The result was generally satisfactory and this was also the result of the examination of some samples taken in London.

BOOKS, ETC., RECEIVED.

AMERICAN CLIMATOLOGICAL ASSOCIATION, Philadelphia. (Secretary: Dr. GUY HINSDALE, Hot Springs, Virginia, U.S.A.).

Transactions of the American Climatological Association. For the Year 1908. Volume XXIV. Price not stated.

BAILLIÈRE, TINDALL, AND COX, London.

Operations upon the Uterus, Perineum, and Round Ligaments. By W. J. Stewart McKay, M.B., M.Ch., B.Sc. Price 21s. net.

BUMPUS, JOHN AND EDWARD, LIMITED, London.

Notes from a Collector's Catalogue. With a Bibliography of English Cookery Books. By A. W. Oxford Price 5s. net.

CLARENDON PRESS, Oxford. (HENRY FROWDE, London.)

Experimental Embryology. By J. W. Jenkinson, M.A., D.Sc. Price 12s. 6d net.

CONSTABLE, ARCHIBALD, AND CO., LIMITED, London.

The Mercers' Company Lectures on the Fluids of the Body. By Ernest H. Starling, M.D., F.R.C.P., F.R.S. Price 6s. net.

DOIN, OCTAVE, ET FILS, Paris.

Manuel de Thérapeutique Clinique des Maladies Tropicales. Par le Dr. A. Guillon. Price Fr. 7.

ENKE, FERDINAND, Stuttgart.

Zeitschrift für das gesamte deutsche, österreichische und schweizerische Hebammenwesen. Herausgegeben von Georg Burckhard, Paul Rissmann, und Heinrich Walther. I. Band. I. Heft. Preis für den Band von 4 Heften, M. 14; jährlich ein Band.

FISCHER, GUSTAV, Jena.

Handbuch der Gesamten Therapie. In sieben Bänden. Herausgegeben von Dr. F. Penzoldt und Dr. R. Stintzing. Vierte Auflage des Handbuchs der Therapie Innerer Krankheiten. Erste Lieferung. Price M. 1.

Allgemeine Physiologie. Ein Grundriss der Lehre vom Leben. Von Max Verworn, Dr. Med. et Phil. Fünfte, vollständig neu bearbeitete Auflage. Price M. 16; geb., M. 18.

Untersuchungen über die Pathologische Anatomie der Beri-Beri. Von Professor Dr. Hermann Dürck. Price M. 25.

Volksseuchen. Vierzehn Vorträge. Herausgegeben vom Zentralkomitee für das ärztliche Fortbildungswesen in Preussen, in dessen Auftrage redigiert von Professor Dr. R. Kutner. Price M. 6; geb., M. 7.

Handbuch der Technik und Methodik der Immunitätsforschung. Herausgegeben von Dr. R. Kraus und Dr. C. Levaditi. Zweiter Band, Zweite Lieferung. Price M. 25.

Skelet der Oberen und Unteren Extremität. Von W. Krause. Price M. 9.

HODGE, WILLIAM, AND CO., Edinburgh and Glasgow.

The Alcohol Case. The Summing Up. By Father Power, S.J. Price 6d. net.

LLOYD, EDWARD, LIMITED, London.

The Municipal Year Book of the United Kingdom for 1909. Edited by Robert Donald. Price 7s. 6d. net.

LONGMANS, GREEN, AND CO., London, New York, Bombay, and Calcutta.

The Human Species. By Ludwig Hopf. Authorised English Edition. Price 10s. 6d. net.

MASSON ET CIE, Paris.

Précis de Dermatologie. Par J. Darier. Price Fr. 12.

McDONALD, JAMES P., C.O., W. H. WENDT AND CO., Brisbane, Queensland, Australia.

The Students' Pictorial Pocket Series. By James P. McDonald. Vol. I. B.P. Doses, Solubilities, Therapeutics, Preparations and Poisons Tabulated. Price 3s. 6d., or posted, 3s. 9d.

MURRAY, JOHN, London.

The Interpretation of Radium. By Frederick Soddy, M.A. Price 6s. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BIRD, GERALD F., M.B. Cantab., has been appointed Medical Officer to the Meath Home for Epileptic Women and Girls, Godalming.

BLAXLAND, A. J., M.B., B.S. Lond., has been appointed Honorary Assistant Surgeon to the Norfolk and Norwich Hospital.

BUCHAN, GEORGE F., M.B., Ch.B. Glasg., D.P.H. Camb., has been appointed Medical Officer of Health of the Urban District of Heston and Isleworth, Hounslow.

CANNEY, J. R. C., M.B., B.C., L.R.C.P. Lond., M.R.C.S., has been appointed House Surgeon at University College Hospital.

HENEGHAN, P. J., L.A.H. Dub., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Ballindine District of the county of Mayo.

HEWKLEY, FRANK, M.B. Durh., F.R.C.S. Eng., has been appointed Honorary Ophthalmic Surgeon to the Western General Dispensary, Marylebone-road, N.W.

HILL, Miss E. S., M.B., Ch.B. Glasg., has been appointed Medical Inspectress of School Children for the Borough of Burslem.

LEWIS, JOHN, M.B., B.S., M.R.C.S., L.R.C.P. Lond., has been appointed Obstetric Assistant to University College Hospital.

LLOYD, D. G., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Newcastle Emlyn No. 2 District of the counties of Carmarthen and Pembroke.

PATERSON, A. S., M.B., Ch.B. Edin., has been appointed Resident Surgical Officer at the Royal Hospital, Salford.

REESE, DAVID WILLIAM, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer of Health for the Warmley (Gloucestershire) Union.

REID, DOUGLAS ARTHUR, M.D. Edin., M.R.C.S., L.S.A., has been appointed Medical Officer of Health of the Borough of Tenby.

SUTHERLAND, HALLIDAY, M.D. Edin., has been appointed Resident Physician to the Royal Victoria Hospital for Consumption, Edinburgh.

WALKER, E. A., M.B., Ch.B. Edin., has been appointed House Physician at the Royal Hospital, Salford.

WALLER, H. K., M.R.C.S., L.R.C.P. Lond., has been appointed House Physician at University College Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BARNSLEY, BECKETT HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board and lodging.

BIRKENHEAD UNION INFIRMARY AND SANATORIUM.—Resident Assistant Medical Officer. Salary £120 per annum, with board, washing, and apartments.

BIRMINGHAM, CITY HOSPITAL.—Resident Assistant Medical Officer. Salary £120 per annum, with board, washing, &c.

BIRMINGHAM, CITY OF.—Assistant Medical Officer of Health. Salary £250 per annum.

BRIGHTON, ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, Dyke-road.—House Surgeon for six months. Salary at rate of £90 per annum, with board, lodging, and washing.

BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN.—Assistant House Surgeon. Salary £50 per annum, with board, rooms, and attendance.

BURY INFIRMARY.—Junior House Surgeon. Salary £80 per annum, with board, residence, and attendance.

CANCER HOSPITAL, Fulham-road, London, S.W.—Surgical Registrar. Salary £26 5s. per annum.

CANTERBURY, KENT AND CANTERBURY HOSPITAL.—House Surgeon, unmarried. Salary £90 per annum, with board and lodging.

CHELTENHAM GENERAL HOSPITAL.—Honorary Surgeon for Eye, Ear, Nose, and Throat Diseases. Also Honorary Clinical Pathologist.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House Physician for six months. Salary at rate of £75 per annum, with board and residence.

COLCHESTER, ESSEX COUNTY HOSPITAL.—House Surgeon. Salary £80 per annum, with board, washing, and residence.

DUDLEY GUEST HOSPITAL.—Assistant House Surgeon. Salary £60 per annum, with residence, board, and lodging.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—House Surgeon and Assistant House Surgeon. Salaries £80 and £40 per annum respectively, with board and washing.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge-road, S.E.—Physician to Out-patients.

GREAT NORTHERN CENTRAL HOSPITAL.—Clinical Assistant.

HARTLEPOOLS HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and washing.

HULL, ROYAL INFIRMARY.—House Physician, unmarried. Salary £100 per annum, with board and apartments.

INVERNESS DISTRICT ASYLUM.—Junior Assistant Physician. Salary £100 per annum, with board, lodging, and laundry.

LEAMINGTON, WARNEFORD, LEAMINGTON, AND SOUTH WARWICKSHIRE GENERAL HOSPITAL.—Senior and Junior Resident Medical Officers. Salary of former £100 and of latter £65 per annum, with board, washing, and apartments.

LEAVESDEN ASYLUM.—Assistant Medical Officer, unmarried. Salary £150 per annum, with board, lodging, and washing.

LEEDS GENERAL INFIRMARY.—Ophthalmic House Surgeon. Salary at rate of £50 per annum, with board, residence, and washing.

LEEDS PUBLIC DISPENSARY.—Junior Resident Medical Officer. Salary £100 per annum, with board and lodging.

LIVERPOOL EYE AND EAR INFIRMARY, Myrtle-street.—Honorary Assistant Surgeon.

LIVERPOOL INFIRMARY FOR CHILDREN.—Resident Medical Officer for six months. Salary £30, with board and lodging.

LIVERPOOL, MILL-ROAD INFIRMARY.—Assistant Resident Medical Officer, unmarried. Salary £100 per annum, with board, &c.

LIVERPOOL, ROYAL SOUTHERN HOSPITAL.—House Physician. Salary £60 per annum, with board and residence.

LIVERPOOL, STANLEY HOSPITAL.—Senior House Surgeon. Also Two Junior House Surgeons. Salary of former £100 per annum, and of latter £60 per annum.

MANCHESTER, MONSALL FEVER HOSPITAL.—Medical Superintendent. Salary £425 per annum.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL, Cheetham.—Resident Medical Officer. Salary £80 per annum.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, Chenies-street, Gower-street, W.C.—Clinical Pathologist.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead and Northwood, Middlesex.—Senior and Junior Resident Medical Officers. Salary of former £100 per annum and of latter £50 per annum, with board and residence.

NEWCASTLE-UPON-TYNE, ROYAL VICTORIA INFIRMARY, Queen Victoria-road.—Pathologist and Lecturer on Pathology. Salary £400 per annum.

NORWICH, NORFOLK AND NORWICH HOSPITAL.—Assistant House Surgeon for six months. Salary £20, with board, lodging, and washing.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—House Physician and House Surgeon for six months. Salary in each case at rate of 50 guineas per annum, with board and residence.

PADDINGTON INFIRMARY AND WORKHOUSE.—Medical Officer for six months only. Salary at rate of £72 per annum, with board, lodging, and washing.

PORTSMOUTH WORKHOUSE, INFIRMARY, &c.—Second Assistant Resident Medical Officer. Salary £100 per annum, with apartments, rations, &c.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—House Physician for six months. Salary at [rate of £60 per annum, with board, lodging, and washing.

ROYAL NAVAL MEDICAL SERVICE.—Examination for 15 Commissions.

ST. LUKE'S HOSPITAL FOR MENTAL DISEASES, Old-street, London.—Clinical Assistant, unmarried, for six months. Board, apartments, and washing provided.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.—Honorary Physician. Also Honorary Anæsthetist.

SALFORD ROYAL HOSPITAL.—Junior House Surgeon. Salary at rate of £50 per annum, with board and residence.

SEAMEN'S HOSPITAL SOCIETY, Greenwich.—Two House Physicians and Two House Surgeons. Salary in each case £50 per annum, with board, residence, and washing.

SOUTHAMPTON FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board and residence.

SOUTHPORT EDUCATION DEPARTMENT.—School Medical Officer. Salary £250 per annum.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Junior House Surgeon. Salary £90 per annum, with residence, board, and washing.

STOCKPORT EDUCATION COMMITTEE.—School Medical Officer. Salary £250 per annum, rising to £300.

VENTNOR, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION.—Assistant Resident Medical Officer, unmarried. Salary £100 per annum, with board and lodging.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Surgeon for six months. Salary £30, with board and lodging.

WAKEFIELD, CLAYTON HOSPITAL.—Junior House Surgeon, unmarried. Salary £80 per annum, with board, lodging, and washing.

WALLASEY DISPENSARY AND VICTORIA CENTRAL HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with apartments, board, and service.

WEST LONDON HOSPITAL AND POST-GRADUATE COLLEGE, Hammersmith-road, W.—Clinical Assistants. Also Three Casualty Officers.

WORCESTER GENERAL INFIRMARY.—House Physician. Salary £100 per annum, with board, residence, and washing.

Births, Marriages, and Deaths.

BIRTHS.

CAMPBELL-HORSFALL.—On March 14th, at Sisson Lodge, Newquay, Cornwall, the wife of Charles Campbell-Horsfall, M.B., of a daughter.

DEAN.—On Tuesday, March 16th, at 29, Wieland Strasse, Charlottenburg, Berlin, the wife of H. R. Dean, M.A., M.B. Oxon., M.R.C.P., of a son.

KEELE.—On March 23rd, at 14, Highbury-grove, N., the wife of David Keele, M.R.C.S., L.R.C.P., of a son.

NAYLOR.—On March 13th, at Tipton Green, Staffordshire, the wife of Joseph Naylor, M.R.C.S. Eng., L.R.C.P. Lond., of a daughter.

TAYLOR.—On March 12th, at Wray Croft, Lacock, Chippenham, the wife of S. H. Stanley Taylor, M.B., Ch.B., of a son.

DEATHS.

HUNGERFORD.—On March 19th, at Duke's-avenue, Chiswick, Deputy Surgeon-General Richard Hungerford, late 53rd Regiment, in his 75th year.

PENNY.—On March 20th, at Southwood Villa, Muswell Hill-road, N., William Lowry Penny, M.D. Cantab., M.R.C.S., aged 60 years.

STIRLING.—On March 19th, at Laverock Bank-road, Edinburgh, James Hutchison Stirling, LL.D., F.R.C.S. Edin., in his 89th year.

TAYLOR.—On March 21st, at Wray Croft, Lacock, Chippenham, Hilda Mary Fanny, dearly loved wife of S. H. Taylor, M.B., Ch.B., and daughter of the late Arthur F. Robarts and Fanny Robarts of Craycombe, Worcestershire, aged 28.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

LEPROSY IN BASUTOLAND.

Mr. E. C. Long, principal medical officer of Basutoland, in his report for 1907-08, which has been received at the Colonial Office, states that the general health of the territory has been good and that there have been no epidemics of any serious disease, though he regrets to add that several cases of cerebro spinal meningitis occurred during the year, the first observed case having been that of a native from Johannesburg, where the disease has been endemic for some time. Mr. Long has also prepared an account of further investigations into the subject of leprosy in Basutoland. The figures dealt with refer to the years 1904-08. The report, he points out, should not be taken to represent a complete review of all cases of leprosy existing in the territory at the present moment. The time and opportunities at the disposal of the medical staff have not permitted an exhaustive inquiry to be made. Lepers are scattered far and wide throughout the country, and nothing short of a prolonged tour through the remoter districts would suffice to insure every case being recorded. On previous occasions difficulty was experienced in tracing cases of leprosy, many of which were concealed, partly from ignorance and partly from fear lest something untoward should happen to them if they came under observation. These difficulties only exist now in a minor degree. The chiefs have readily coöperated in tracing lepers living in their wards. The contagious nature of the disease and the necessity for its segregation are becoming recognised and efforts to isolate cases are being made by the people themselves. In 1904 the known number of lepers was 181. 192 have since been observed and it is estimated that 150 more are in existence. Of the 192 cases recorded since 1904 137 were already suffering from leprosy prior to that date and only recently came under observation; in 55 cases the disease was first observed at some date during the period under review, or an average incidence of 14 fresh cases per annum. The age incidence approximates to that previously observed, the details being: between 1 and 10 years of age, 1 case; between 10 and 20, 19; between 20 and 30, 36; between 30 and 40, 47; between 40 and 50, 33; between 50 and 60, 34; 60 and over, 22; total, 192. The evidence against the influence of heredity also agrees with that obtained before. In only 19 cases was the mother leprous, in 15 the father leprous, and in seven both parents. In the majority of these instances leprosy manifested itself in parents after the birth of the children. Additional evidence against the hereditary nature of the disease is adduced by the fact that in the families included in the 192 cases above referred to there were in all 570 children, of whom only 22 had been or are lepers. Corroborative evidence, however, is found in favour of the contagiousness of leprosy. In 104 cases there was evidence of more or less close association with lepers, either through collateral branches of the family or through other cases of leprosy existing in the same villages. The commonest type of the disease was the mixed variety. Severe cases of mutilation were observed in old-standing cases. In the absence of any registration of deaths and births no trustworthy statistics of the mortality from the disease are available. Of the cases recorded in 1904 20 are known to have died. The balance added to the cases referred to in this report, together with the 150 additional cases assumed to exist, give a total of 503 lepers in a population of 347,731, or approximately 1 per 700 of the inhabitants. That the disease is but slowly increasing may be assumed; the increase is not sufficiently rapid to give great cause for alarm. The recognition by the people of the gravity of leprosy and their willingness to segregate lepers is a hopeful augury for the future. Under existing conditions no drastic measures in this direction are possible or advisable. Once the chiefs and the people as a nation are convinced of the necessity for segregation all difficulties in dealing with the disease will disappear. One danger lies in the non-recognition of early cases. Judging, however, by the shrewdness and accuracy displayed by the Basuto in diagnosing syphilis, even in mild cases, it may be inferred that as knowledge of leprosy and its dangers spreads amongst the people they will be quick to recognise and report early cases. In the meantime, the gradual perfection of the present system of recording known cases will enable the Government at any time to gauge the extent of the disease and afford assistance in any future preventive measures which may be deemed necessary.

THE ADVANTAGES AND METHOD OF USING AMPOULES.

Dr. G. Pégurier, in a recent issue of the *Chemist and Druggist*, deals with the history, preparation, and mode of using ampoules, which are very widely employed on the continent in preference to hypodermic tablets. The first type of ampoule was Pasteur's pipette and sterile flask. About 30 years ago M. Limousin introduced the ampoule as a convenient method of preserving hypodermic solutions and they now form part of the medical stores of many continental armies and navies. Ampoules are filled and are then sterilised in an autoclave. They afford a means of permanently preserving almost any drug in the form of an aseptic solution of known strength. In the case of hypodermic tablets the resulting solution is not aseptic, and many

drugs, including ether, lecithin, guaiacol, and deliquescent substances, cannot be made into tablets. In using ampoules it is usual to break off the point of the ampoule by means of a file and insert the needle of a hypodermic syringe, manipulating the piston so as to transfer the required quantity of the solution to the syringe. In the case of ampoules containing oily or viscous liquids it is advisable to break off both tips of the ampoule, holding it in a horizontal position and closing one end with the forefinger as in using a pipette. The liquid can then be poured into the barrel of the syringe. This method is the most convenient for the physician and is preferred on account of the lower cost of this form of ampoule. In the case of large ampoules containing serums the straight point is cut off and a little of the liquid is shaken out so as to expel any particles of glass that may be present. The point is then connected with a rubber tube two metres long, fitted with a hollow platinum needle, and the ampoule is fastened by the bent portion to the bed hangings by means of a safety-pin. The point of the bent part is then cut off and the liquid is run through the rubber tube to expel all traces of air. The desired rate of flow of the serum is obtained by regulating the height of the ampoule above the floor. The rubber tube is sterilised by heating in steam at 100° C., or preferably at 120° C.

DERMATITIS HERPETIFORMIS.

To the Editor of THE LANCET.

SIR,—Would any of your readers be kind enough to suggest a line of treatment for a case of dermatitis herpetiformis of four years' standing in a lad, aged 13 years? He has some tenderness of the spine and slight spinal (lateral) curvature. There is a history of tuberculosis on the maternal side. I am, Sir, yours faithfully,

March 19th, 1909. DISCOURAGED.

A DISCLAIMER.

Mr. N. Walmisley writes to us to protest against the appearance of an article in the London edition of the *Anglo-Continental Illustrated Gazette* describing an alleged interview between himself and a reporter of that paper. We are not surprised that the appearance of the article has caused annoyance to Mr. Walmisley. His disclaimer of any responsibility in the matter is supported by a statement in the article that "the doctor was not aware who our reporter was."

ENEMIES OF SOCIETY.

AT the Bromley petty sessions on March 22nd a man and a woman, we learn from *The Times*, were summoned by the Beckenham urban district council for exposing children who were suffering from scarlet fever and not taking proper precautions. The children had been sent home from school with a message that they had scarlet fever and must be seen by a medical man; the defendants not only disregarded this advice but let them go to an entertainment on the same night. The chairman of the Bench rightly stigmatised the case as one of absolute callousness and fined each defendant £5 and costs.

H.R.K. has sent us the familiar quack advertisement, though the statements are perhaps a little more violently mendacious than usual. Notice in our columns would do no good. If an influential person could be found to represent to the editor or proprietor of the newspaper publishing the advertisement the cruelty of helping in such a way to gull the public some good might follow.

Anxious should consult her usual medical attendant.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, March 25th, 1909.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Mar. 19	29·22	S.W.	0·13	81	54	42	46	47	Cloudy
,, 20	29·47	S.	0·07	73	54	47	47	48	Cloudy
,, 21	29·50	S.E.	0·01	82	49	41	43	45	Fine
,, 22	29·61	S.W.	0·06	56	49	44	45	46	Overcast
,, 23	29·70	S.E.	0·06	65	51	45	45	45	Overcast
,, 24	29·82	S.W.	...	56	51	44	45	46	Overcast
,, 25	29·20	W.	0·26	86	53	41	45	49	Cloudy

During the week marked copies of the following newspapers have been received:—*Yorkshire Post and Mercury, Evening Standard and St. James's Gazette, Yarmouth Independent, Literary Digest, Yeovil Gazette, Oldham Standard, Durham Advertiser, Wimbledon Gazette, Wimbledon Boro' News, Morning Leader, Richmond Times, Cardiff Daily Mail, Birmingham Mail, Notts Guardian, Bradford Observer, Liverpool Post, Westminster Gazette, &c.*

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 20, Hanover-square, W.

FRIDAY.

LARYNGOLOGICAL SECTION (Hon. Secretaries—George C. Cathcart, Atwood Thorne): at 5 P.M.

Cases:

Dr. J. Dundas Grant: (1) Case of Retro-bulbar Neuritis probably attributable to Sphenoidal Disease; (2) Case of Swelling over Superior Maxilla due to Angeio-neurotic Œdema; (3) Case of Rhinitis Caseosa.

Sir Felix Semon, K.C.V.O.: Additional Note on Case of Malignant Disease in Left Pyriform Sinus, shown on Nov. 6th, 1908, and Feb. 5th, 1909.

Mr. Stuart-Low: Case of Thyroid Tumour at the Base of the Tongue exhibited at the last meeting, now shown After Removal, with Specimen, Microscopic Slide, and Illustrations.

N.B.—Fellows of the Society are entitled to attend and to speak at all Meetings.

RÖNTGEN SOCIETY, 20, Hanover-square, W.

THURSDAY.—8.15 P.M., Mr. J. H. Gardiner: The Origin, History, and Development of the X Ray Tube.

NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's Hospital, Tottenham, N.

THURSDAY.—4.15 P.M., Discussion on Empyema (opened by Dr. T. R. Whipham).

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY.—8 P.M., Clinical Evening. Cases.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY.—5 P.M., Dr. N. Moore: Rheumatic Fever and Valvular Disease. (Lumleian Lecture).

THURSDAY AND FRIDAY.—5 P.M., Prof. C. S. Sherrington: The Rôle of Reflex Inhibition in the Coördination of Muscular Action. (Oliver-Sharpey Lectures).

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. G. Little: Clinique (Skin).
TUESDAY.—4 P.M., Dr. G. A. Sutherland: Clinique (Medical).
WEDNESDAY.—4 P.M., Mr. R. Johnson: Clinique (Surgical).
THURSDAY.—4 P.M., Sir Jonathan Hutchinson: Clinique (Surgical).
FRIDAY.—4 P.M., Mr. E. Clarke: Clinique (Eye).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Pathological Demonstration:—Dr. Low. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Mr. Etherington-Smith: Clinical.

TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Mr. Armour: Clinical.

WEDNESDAY.—10 A.M., Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Saunders: Diseases of Children. 12.15 P.M., Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women.

THURSDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Mr. Keetley: Clinical.

FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. Lecture:—Medical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Mr. Pardoe.

SATURDAY.—10 A.M., Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Saunders: Diseases of Children. 12.15 P.M., Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10 A.M., Surgical Out-patient (Mr. H. Evans). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. H. W. Carson); X Rays. 4.30 P.M., Medical In-patient (Dr. A. J. Whiting).

TUESDAY.—Clinic: 10 A.M., Medical Out-patient (Dr. A. G. Auld). 2.30 P.M., Operations (Mr. Carson). Clinics:—Surgical Out-patient (Mr. W. Edmunds); Gynæcological (Dr. A. E. Giles).

WEDNESDAY.—Clinics:—2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. H. W. Carson); X Rays. 3 P.M., Medical In-patient (Dr. G. P. Chappel).

FRIDAY.—10 A.M., Clinic:—Surgical Out-patient (Mr. H. Evans). 2.30 P.M., Operations (Mr. W. Edmunds). Clinics:—Medical Out-patient (Dr. A. G. Auld); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Leslie). Demonstration:—Dr. F. Thomson: Cases of Infectious Fevers (at the North-Eastern Fever Hospital, St. Ann's-road, N.).

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—2 P.M., Operations. 2.15 P.M., Sir Dyce Duckworth: Medicine. 3.15 P.M., Mr. Turner: Surgery. 4 P.M., Mr. Lawrence: Ear and Throat. Special Lecture:—Mr. Lawrence: Aphonia. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.

TUESDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Wells: Medicine. 3.15 P.M., Mr. Carless: Surgery. 4 P.M., Sir M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin.

WEDNESDAY.—2 P.M., Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

THURSDAY.—2 P.M., Operations. 2.15 P.M., Dr. G. Rankin: Medicine. 3.15 P.M., Sir W. Bennett: Surgery. 4 P.M., Dr. Sale-Barker: Radiography. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.

FRIDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Bradford: Medicine. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin.

SATURDAY.—2 P.M., Operations. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, 73, Welbeck-street, W.

MONDAY.—3 P.M., Clinical Demonstration: Dr. H. Campbell.

TUESDAY.—5 P.M., Clinical Demonstration: Dr. J. Mackenzie.

WEDNESDAY.—3 P.M., Clinical Demonstration: Dr. F. Palmer.

THURSDAY.—3 P.M., Clinical Demonstration: Dr. T. D. Savill.

FRIDAY.—2 P.M., Clinical Demonstration: Dr. P. Stewart. 5 P.M., Clinical Demonstration: Dr. E. Macnamara.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road, W.C.

TUESDAY.—3.45 P.M., Lecture:—Mr. W. H. George: Anæsthetics.

FRIDAY.—3.45 P.M., Lecture:—Mr. W. Wallis: Mouth and Teeth.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (29th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.).

TUESDAY (30th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

WEDNESDAY (31st).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (1st).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (2nd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (3rd).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

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